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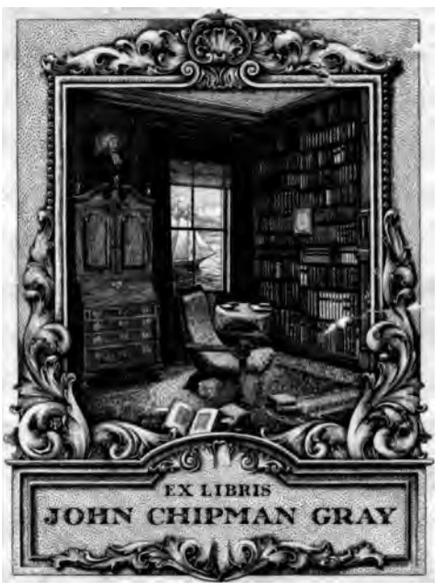

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MÉCANIQUE CÉLESTE.

Nath'l Bowditch

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MÉCANIQUE CÉLESTE.

BY THE

MARQUIS DE LA PLACE,

PEER OF FRANCE; GRAND CROSS OF THE LEGION OF HONOR; MEMBER OF THE FRENCH ACADEMY, OF THE ACADEMY OF SCIENCES OF PARIS, OF THE BOARD OF LONGITUDE OF FRANCE, OF THE ROYAL SOCIETIES OF LONDON AND GÖTTINGEN, OF THE ACADEMIES OF SCIENCES OF RUSSIA, DENMARK, SWEDEN, PRUSSIA, HOLLAND, AND ITALY; MEMBER OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES; ETC.

TRANSLATED, WITH A COMMENTARY,

BY

NATHANIEL BOWDITCH, LL. D.

FELLOW OF THE ROYAL SOCIETIES OF LONDON, EDINBURGH, AND DUBLIN; OF THE ASTRONOMICAL SOCIETY OF LONDON, OF THE PHILOSOPHICAL SOCIETY HELD AT PHILADELPHIA, OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES; CORRESPONDING MEMBER OF THE ROYAL SOCIETIES OF BERLIN, PALERMO; ETC.

VOLUME IV.

WITH A MEMOIR OF THE TRANSLATOR,

BY HIS SON,

NATHANIEL INGERSOLL BOWDITCH.

BOSTON:

FROM THE PRESS OF ISAAC R. BUTTS;

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MEMOIR.

THE following Memoir has been printed as part of the Fourth Volume of Dr. Bowditch's Translation of the *Mécanique Céleste*. A short notice, containing the outline of the present one, with only a few of its details, was written by the author during his father's last illness and upon the day of his death. It was prepared solely for the private perusal of a few friends, without any view to its publication. Six months passed, and the volume which had been left unfinished by the Translator was completed. At this time, it was suggested by the family that with it should be published the original notice, prepared as above mentioned. This led the author, who was conscious of its defects and omissions, to write it again in the form in which it is now laid before the reader. Several of the notes were added from day to day during the process of stereotyping, which continued from the month of November to the sixteenth of March, being exactly one year after Dr. Bowditch's death. Though the delay has been greater than was wished or expected, it has probably contributed somewhat to the accuracy and completeness of the Memoir.

Of the *Mécanique Céleste* only five hundred copies have been printed, the greater part of which will probably remain unsold for several years, as, from the nature of its subject, it must necessarily find but few readers, besides that it is contained in four large and expensive quarto volumes. The author has, therefore, caused to be printed a small extra edition of the Memoir, chiefly with the view of presenting it to such individuals as he believed would feel an interest in the account which he has given of his father's life and character.

This copy is presented to

John C. Gray Esq
with the respects of
The author

Boston May 21 1839.

Mary Bowditch

THIS

TRANSLATION AND COMMENTARY

ARE DEDICATED, BY THE AUTHOR,

To the Memory of his Wife,

MARY BOWDITCH;

WHO DEVOTED HERSELF TO HER DOMESTIC AVOCATIONS WITH GREAT JUDGMENT, UNCEASING KINDNESS, AND A ZEAL WHICH COULD NOT BE SURPASSED;

TAKING UPON HERSELF THE WHOLE CARE OF HER FAMILY,

AND THUS PROCURING FOR HIM THE LEISURE HOURS TO PREPARE THE WORK;

AND SECURING TO HIM,

BY HER PRUDENT MANAGEMENT,

THE MEANS FOR ITS PUBLICATION IN ITS PRESENT FORM,

WHICH SHE FULLY APPROVED;

AND

WITHOUT HER APPROBATION THE WORK WOULD NOT HAVE BEEN UNDERTAKEN.

MEMOIR.

THE children of the late Dr. Bowditch feel assured that every reader of this Translation and Commentary will be desirous to know something of the life and character of him who planned and executed so vast a work, and of her to whose memory it is dedicated. We have been blessed in our parents far beyond the lot of others. Such a father and such a mother are but rarely given by Heaven to any one. Both now sleep in the grave; and our kindred dust will soon be mingled with theirs in that last resting-place. But after the lapse of many years, this work, devoted to the elucidation of one of the most abstruse and profound subjects of human investigation, will still endure, a memorial of the genius of its author. Upon this monument we would inscribe our filial tribute — a record of the parents' virtues, of the children's gratitude and affection.

NATHANIEL BOWDITCH was born at Salem, in Massachusetts, March 26, 1773, being the fourth of seven children of Habakkuk Bowditch, by his wife Mary, who was the daughter of Nathaniel Ingersoll. His ancestors had always resided in that place from its earliest settlement, having been, for the four last generations, ship-masters. Tradition has handed down the fact, that three

brothers, Jonathan, Joel, and William Bowditch, emigrated to this country from England, and, as is believed, from the city of Exeter, or its immediate vicinity. William became an inhabitant of Salem in 1639. His humble situation in life may be inferred from the title of "Goodman," by which he is mentioned, as distinguished from the more dignified appellation of "Mr." He was living in 1649, in which year he had a grant of thirty acres of land from the town. The time of his death is unknown.

He left an only child, of the same name, who was born in 1640, and died in 1681. He was collector of the port of Salem under the Colonial government, and owned a warehouse and other real estate, and several small vessels, but died insolvent. He likewise left an only child, also named William, who was born in September, 1663, and died May 28, 1728, in the sixty-fifth year of his age. He was actively engaged as a ship-master for many years, and was well known as an enterprising merchant. A dangerous rock in the channel of the harbor, of which the original Indian name was "Tenapoo," still bears the name of "Bowditch's Ledge," which was given to it in consequence of a vessel called the "Essex Galley," under his command, having struck upon it about the year 1700. He was for many years one of the selectmen for managing the affairs of his native town, and served also, during several sessions, as a representative in the General Court of the Province. He married, August 30, 1688, Mary, the daughter of Thomas Gardner, Esq., a wealthy merchant. She died in 1724, four years before her husband. He left an estate valued at between four and five thousand pounds. The grave-stones of both husband and wife are still to be seen in the burial-ground at Salem,

though the inscriptions are partially effaced. There were eleven children from this marriage, the seventh of whom was Ebenezer, who was born April 26, 1703, and died February 2, 1768, also in the sixty-fifth year of his age. He was the only son of this numerous household who left male descendants, and thus became the common ancestor of all who now bear the family name in Salem. He married, August 15, 1728, Mary, the daughter of the Hon. John Turner, one of the most distinguished citizens of Salem, long a member of the Provincial Council, and well known in the local history of that time. The annalist of Salem says of him, "His deserts were equal to his honors."*

Ebenezer Bowditch preserved through life an irreproachable character, and possessed in a high degree the confidence and respect of the community. He pursued his father's occupation, but, as it seems, without much success, since he left but little property at his death. His wife survived him till May 1, 1785, living in reduced circumstances, and being dependent upon her young grandson, the subject of this memoir, for many little attentions, by which her declining years were rendered more comfortable. They had six children, of whom the fifth was Habakkuk, born in 1738. He also was in early life a ship-master, and, as was the custom of that day, learned the trade of a cooper, a practical acquaintance with which was then deemed an important, though subordinate qualification for the discharge of the appropriate duties of his situation. At the commencement of the revolutionary war, he met with misfortunes in business,

* Annals of Salem, from its first Settlement; by Joseph B. Felt; p. 423.

by which his circumstances became very much reduced; and he was so disheartened, that he had not the energy to attempt to retrieve them. He subsequently worked at the trade of a cooper, which he had originally learned from the motive above stated. But he was able in this manner to earn only a scanty subsistence for his wife and children. Some idea may be formed of his poverty, from the circumstance that, for many successive years, he received fifteen or twenty dollars annually from the charity funds of the Salem Marine Society, of which he was a member, deriving from this sum, small as it was, quite an essential aid toward the support of his family. He was a man very remarkable for strong natural good sense, but had enjoyed no advantages of education. He was an attentive observer and an intelligent judge of men and events as they passed before him. He was extremely conversant with the Scriptures, and entertained liberal and enlightened views on the subjects of religion and revelation. He possessed a cheerful temper and an amiable disposition. But having yielded to the reverses which he had encountered, and which would but have stimulated others to greater efforts, he outlived those prospects of usefulness and happiness, which, upon his entrance into life, seemed to be within his reach. Upon one occasion, his son, alluding to the latter years of his father's life as having been less happy than his earlier ones, expressed the hope that he might not himself "live too long." Habakkuk Bowditch was married July 23, 1765, and died July 18th, 1798, at the age of sixty years.

Mary, the wife of Habakkuk Bowditch, had died December 16, 1783. She was an excellent woman, discharging all the duties

of life with exemplary fidelity. By her death Dr. Bowditch was deprived of his earliest and best friend, at the age of ten years. But there can be no doubt that she had lived long enough to exercise a most salutary influence over her son's mind, and that it is in a great degree to the teachings and example of this pious and affectionate mother, that we may trace the inflexible integrity, the unwavering love of truth, and the high moral principle, for which he was through life distinguished. From her he learned his first lesson as to the value of truth. While a child, playing behind his mother's chair, he had, unobserved by her, unrolled a ball of yarn, from which she was knitting, and involved it in inextricable confusion. When she discovered the mischief, and addressed him with some severity of manner, he denied having done it. She at once entered into a very serious conversation with him, and while she told him that the original matter of offence was but trifling, she explained to him so fully the meanness and criminality of falsehood, and urged him with so much earnestness never again to be guilty of it, that this lesson of his infancy became indelibly impressed upon his heart. He was always a favorite child. She was interested in the early development of his character and talents, and, it is said, was sometimes obliged even to restrain and check his fondness for study, as being excessive. She has been heard to say that he would be "something decided." To use his own expression, "she idolized him;" and he never spoke of her but in terms of the most respectful and affectionate remembrance. Her excellent influence extended to all her children. They grew up together, as one observed of them, "a loving household," remarkable

as a family for their excellent moral character and their strong mutual attachment.

Dr. Bowditch survived all his brothers and sisters for nearly thirty years. The eldest, Mary, born March 27, 1766, took upon herself, after her mother's death, the whole charge of the family, and almost supplied, towards the younger children, the place of that excellent parent whom they had lost. She married, April 20, 1791, Mr. David Martin, a ship-master, who died a few years afterwards. She herself died December 2, 1808, at the age of forty-two years, leaving to her brother's care an only child, who afterwards always resided in his family, repaying his kindness by the attentions of a daughter, and being to us as an elder sister. As such, she unites with us upon the present occasion.

The second child, Habakkuk, was born May 2, 1768, and was drowned in Boston about forty years ago. It is not known that he manifested any peculiar taste for the study of mathematics.

The third child, Elizabeth, was born May 16, 1771, and died December 9, 1791, in consequence of a fall down a flight of steps, having lingered in great agony a short time after the accident. Dr. Bowditch often mentioned, with much emotion, the circumstances of the death of this sister, who, being but two years older than himself, had always been the object of his peculiar regard and affection. In the midst of life and health, and with a countenance radiant with smiles and joy, she was about to leave her friends for a few moments, when a single misstep removed her from them forever.

The fifth child, William, was born May 5, 1776. He embraced a sea-faring life, and, while absent upon one of his voyages, died at Trinidad, in the autumn of 1799, at the age of twenty-three years. He was quite as remarkable for his mathematical talents as his elder brother, and, had he lived, might perhaps have been equally distinguished for the successful cultivation of this branch of science. In the first edition of the Practical Navigator he is mentioned as the author of one of the notes to Table XIV. Dr. Bowditch delighted to speak of the purity, and almost holiness of character of his brother William; and another, who knew well his early virtues, has said of him, "He was sanctified from his birth."

The sixth child, Samuel, was born September 13, 1778, and died April 5, 1794, at the age of sixteen years. He also possessed great quickness at mathematical calculations. But he pursued his studies with a waywardness and eccentricity which would probably have prevented his acquirements from being as great as might have resulted from a more regular and systematic cultivation of his naturally excellent talents.

The seventh child, Lois, was born March 29, 1781, married her cousin, Mr. Joseph Bowditch, September 28, 1806, and died without children, July 29, 1809, aged twenty-eight years. The eldest and youngest daughters only of this family were married, and they were also both on their death-beds at one time and place, prostrated by the same fatal disease, consumption.* Dr. Bowditch,

* One of them, at this time, presented to the eldest child of Dr. Bowditch a little silver

in his last illness, said that it had always been a source of pleasure to him to remember that these sisters, when dying, had each told him that he had been through life a good brother to them; "but," added he, "it gives me greater pleasure now than ever before." He also said that "they died with the calmness of two Stoics." He once mentioned that, in settling the estate of his deceased sister, the Judge of Probate thought that he had discovered a mistake in the fact that the estate had not been represented insolvent, although more money had been paid away than had been received. The matter was explained, however, by the statement of the administrator, that he should have felt himself disgraced by leaving undischarged the few small debts incurred by his sister, chiefly during her last illness, while he possessed any means of his own with which to pay them.

Such were the parents and such the brothers and sisters of Dr. Bowditch; and amid the domestic influences which have been described were the years of his infancy and childhood passed. Many amusing and interesting incidents of this period of his life might be mentioned. It was one to which he himself always recurred with pleasure, as having been very happy, notwithstanding its many privations. If he was obliged, from motives of economy, to wear the thin garments of summer when the near approach of winter made them less comfortable, he would reply to the laugh of his schoolmates or playfellows by charging them with effeminacy for preferring warmer clothing. If, as was often the case, he sat

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medal, bearing upon it their names, and the inscription, "Virtue and Religion lead to Happiness." Such had been the result of her own experience.

down to a dinner consisting chiefly of potatoes, he felt that a mealy potato was as good fare as he desired. He humorously described one occasion, upon which, when sent to buy a warm loaf of bread for breakfast, he found himself unable, on his way home, to resist the temptation of gradually eating out the soft part, so that, upon his arrival, the upper and under crusts had come in contact. Possessing health and activity of body, he engaged at one moment with earnestness and ardor in all the amusements of boyhood, and in the next returned with increased pleasure to his studies. Yielding sometimes to the impulse of the moment, as in the instance last cited, he committed trifling indiscretions, but nothing mean or vicious was ever developed in his character. Blessed with a joyous and happy temper, he contentedly accommodated himself to the necessities of his situation. The son of a poor mechanic, with no expectations from family or friends, he had within him an energy of purpose by which he was finally to surmount all obstacles.

While he was yet in his infancy, his father removed with the family from Salem to the adjoining village of Danvers, and resided there several years. The house which he occupied is still standing. It is a humble cottage. The main building, as seen in front, exhibits but one door and one window. It was here that his mother first showed him the slight crescent of the new moon, and the fuller orb of the harvest moon, and perhaps first awakened in his mind a curiosity to know more of the nature and laws of the planetary system. He here received instruction from a school-mistress, whose aged relatives still live in the immediate vicinity, and by whom it is distinctly remembered that he was

"a likely, clever, thoughtful boy;" that "his instructress took mightily to him;" that "he was the best scholar she ever had;" that "he learnt amazing fast, for his mind was fully given to it;" and that "he did not seem like other children; he seemed better."

Upon the return of the family to Salem, he was sent, at the age of seven years and three months, to the best school in the town, kept by a Mr. Watson. The character of this "seminary of learning" may perhaps be better realized from the following circumstances than from any more general or elaborate description of it. There was but one dictionary in the school; and a gentleman, who was a fellow-pupil with Dr. Bowditch, never saw one while he was there. Each day, the scholars were called upon to spell aloud, all together, in chorus, the word ***honorificabilitudinity;**** spelling and pronouncing the first syllable, then the two first, three first, &c., which process, applied to the whole word, of course occupied several minutes. He early showed a great fondness for mathematics; but, on account of his extreme youth, his master, it is said, refused to permit him to enter on that branch of study until he had obtained and produced from his father a special request to that effect. He, upon one occasion, solved a problem in arithmetic, which the instructer thought must be above his comprehension, and therefore charged him with having procured the assistance of some older scholar, giving him a severe reprimand for the attempt to deceive him. The timely interference and explanations, indeed, of his

* This word, meaning *honor*, may be found in Bailey's English Dictionary; and Shakspeare uses *honorificabilitudinitatibus*, in Love's Labor Lost, Act 5, Scene 1.

eldest brother, saved him from any actual chastisement; but this indignity and act of injustice Dr. Bowditch never forgot.

But even the slight elementary instruction which he might have obtained at this school, he was obliged to forego altogether at the age of ten years and two months, when he was taken by his father into his cooper's shop, that he might by his labor assist in the support of the family. After remaining here a short time, he entered as a clerk or apprentice into the ship-chandlery shop of Messrs. Ropes and Hodges, when he was about twelve years of age. In this shop he remained till his employers retired from business, at which time, as early as 1790, he entered the similar shop of Mr. Samuel Curwin Ward, where he remained until he sailed on his first voyage, in 1795. Here, when not engaged in serving customers, he spent his time in reading, and particularly in the study of mathematics, for which he then felt a confirmed and decided taste. Upon one occasion, a visiter entered the shop, and, looking at the two clerks, one of whom was asleep behind the counter, and the other diligently occupied with his slate and pencil, smiled and said, "Hogarth's apprentices!" Another visiter observed that, if he kept on ciphering so, he had not any doubt that, in time, he would become *an almanac maker!* And in fact, in the year 1788, he computed an almanac for the year 1790, which is still preserved in his library, being one of the most curious, if not most valuable, manuscripts in that collection. It is also stated that he occasionally tried his dexterity at philosophical experiments; one instance mentioned being that, while in the shop of Ropes and Hodges, he constructed quite a curious barometer. There is now in his library, also, among

other similar articles, a very neat wooden sun-dial, which he made in the year 1792.

These pursuits were, however, only the amusement of his leisure hours. He never allowed them to interfere with the discharge of his duty towards his employers. Upon one occasion, indeed, a customer called and purchased a pair of hinges, at a time when the young clerk was deeply engaged in solving some problem in mathematics, which he thought he would finish before charging the delivery of them upon the books, and when the problem was solved, he forgot the matter altogether. In a few days, the customer called again to pay for them, when Mr. Hodges himself was in the shop. The books were examined, and gave no account of this purchase. The clerk, upon being applied to, at once recollected the circumstance, and the reason of his own forgetfulness. From that day, he made it an invariable rule to finish every matter of business which he began, before undertaking any thing else. Upon his recommendation, given quite late in life, one of his sons adopted as a motto for a seal, "End what you begin." He has himself more than once said, that he never forgot the hinges.

Having once heard, in 1787, from his brother William, a vague account of a method of working out problems by *letters*, instead of *figures*, he succeeded in borrowing the book which contained it, and was so much interested and excited by his first glance at algebra, that he could not get the least sleep during the whole of the next night. An old British sailor, residing at Salem on half pay, and who ended his days as an inmate of the Greenwich

Hospital, taught him the elements of navigation; and when they last met, as he was about to embark for Europe, he patted him on the head, saying, "My boy, you have a taste for these things: keep on studying, and you will be a great man yet:" — an approval which greatly stimulated and encouraged him. He rose each day at the earliest dawn, and devoted his morning hours to study. He has often been heard to say, that the time which he thus gained from sleep, gave him, substantially, all his mathematics. He passed the long winter evenings, too, by the kitchen fireside of his employer, Mr. Hodges, — which his diffidence, as well as the security it offered him from interruption, led him to prefer to the parlor, — quietly engaged in his favorite pursuit; and occasionally, it is said, also rocking, at the same time, the infant's cradle, at the request of the attendant, who wished to be doing something else.

It happened that Mr. Hodges and another gentleman owned together in moieties a very irregularly-shaped field in Salem, and wished to divide it. Accordingly, the young apprentice undertook to make the proposed survey and division, and completed the task with the most minute accuracy. The co-tenant, however, refused to abide by this survey, since he thought that, as it was made by one who was in the employment of Mr. Hodges, it was probable that there had been an unfair bias in his favor. A regular surveyor was then employed, and Dr. Bowditch, who was very indignant at the suspicions entertained in regard to his own result, said that he could not help feeling a malicious pleasure when he found that the gentleman alluded to received for his half part several square feet less than he was entitled to. In 1794, he was employed by the town to assist

Captain John Gibaut in making a survey of Salem, which labor he accordingly performed; and the exact area of the town, as ascertained by this survey, was computed by him.

Being very fond of books, and having no guide in the selection of them, his reading in early life was of the most miscellaneous character. Thus he read through the whole of Chambers's Encyclopædia, in four folio volumes, without omitting an article; and, as his memory, except as to persons and names, was wonderfully retentive, he in this manner acquired a fund of the most varied information. His intimate friends have often been surprised at finding him quite conversant with subjects apparently the most foreign from his favorite studies; and one of the most profound scholars among them observed, that he could hardly form an adequate estimate of the extent of his general attainments. He was an ardent admirer of Shakspeare, whose most beautiful passages were treasured up in his memory from earliest youth. His familiarity with the Old and New Testament was very great, surpassing that of many professed theologians. The family Bible, which he first read, is still preserved, having in it a curious map of the wanderings of the Israelites, and various engravings calculated to awaken that interest in the young reader, which every subsequent perusal in manhood and old age has a tendency to strengthen and confirm. Through the kindness of his friends, and especially of Dr. Prince and Dr. Bentley, both Unitarian clergymen of Salem, the former of whom was distinguished for his fondness for natural philosophy, he obtained the use of books which would otherwise have been unattainable by him. It happened that, in his youth, the extensive scientific library of the late Dr.

Richard Kirwan was captured in the British Channel by a privateer fitted out from Beverly, the next town to Salem. The enlightened and liberal owners of the vessel permitted the library thus captured to be sold at a very low rate to an association of gentlemen in Salem, and it became the basis of the present Salem Athenæum.* From this extremely valuable library, which was a better one than then existed in any part of the United States, except at Philadelphia, he obtained leave freely to take out books, and to consult and study them at pleasure. Among its treasures were the Transactions of the Royal Society of London. All the mathematical papers in these Transactions, and many scientific works, were wholly or partially transcribed by him, and are still preserved in his library, contained in more than twenty folio and quarto common-place books and other volumes. And this immense labor he was obliged to undergo chiefly from his inability to purchase the books in question, — which he wished to have by him permanently, for the purpose of convenient reference, — and partly, perhaps, from his desire to impress their contents more strongly upon his memory than could be done by a mere perusal. The title-page of one of these volumes states that it contains, with the next volume, "A complete Collection of all the Mathematical Papers in the Philosophical Transactions; Extracts from various Encyclopædias, from the Memoirs of the Paris

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* It is an interesting fact, that, many years afterwards, "an offer of remuneration was made to Dr. Kirwan, who respectfully declined it, expressing his satisfaction that his valuable library had found so useful a destination." — *An Eulogy on the Life and Character of Nathaniel Bowditch, LL. D., F. R. S., delivered at the Request of the Corporation of the City of Salem, May* 24, 1838; *by Daniel Appleton White*; p. 43.

Academy; a complete Copy of Emerson's Mechanics; a Copy of Hamilton's Conics; Extracts from Gravesande's and Martyn's Philosophical Treatise, from Bernoulli, &c. &c." He always read with close attention, and endeavored to ascertain the exact meaning of every word about which he was doubtful. This led him, in after life, to collect around him dictionaries, which he constantly consulted. He had more than one hundred in his library.

He began to learn Latin, January 4, 1790, without an instructer, that he might read Newton's Principia, which he had before attempted to understand by means only of his knowledge of mathematical subjects and the various equations and diagrams which it contained. He now read a copy of Euclid, which had been given him by his brother-in-law, Mr. Martin, and which was once the property of Dr. Mather Byles, a clergyman of Boston, distinguished for his humor and eccentricity. The book still retains his original pencil marks, recording the meaning of the simplest Latin words — "*tamen*, nevertheless; *rursus*, again;" &c. He had previously read Euclid in English, and the letters "Q. E. D.," which had remained an impenetrable mystery to him on his previous attempt to read the Principia, were now explained by the "*quod erat demonstrandum*" which he here discovered; but he was for a long time perplexed by the words "*mutatis mutandis*," and unable to conjecture what particular change they indicated. He had received from Dr. Bentley a copy of the Principia, which had formerly been presented by that gentleman to a young friend, who kindly consented to relinquish his prior claims; and this work he at last mastered, as he had done Euclid

before. The Hon. Nathan Reed, then an apothecary in Salem, afterwards a member of Congress, being himself fond of scientific pursuits, was attracted by this love of science manifested by Dr. Bowditch, and formed an intimate acquaintance with him. In his shop was an assistant who was a schoolmate and friend of Dr. Bowditch, and here their Sunday evenings were often passed together. Mr. Reed states as a fact, that Dr. Bowditch, while in Mr. Ward's employment, actually translated Newton's Principia into English. No such translation is, however, now to be found among his papers; though translations of parts of it, indeed, are contained in the manuscript volumes before mentioned. In a similar manner, and from the same motive, he acquired the elements of the French language; to perfect himself in which, he took lessons during sixteen months, from a foreigner then in Salem, whom, in return, he instructed in English. At first, he declined learning the pronunciation, as a matter which could not be of any use to him; but at last, the foreigner was so shocked at hearing him read the words *parlez vous*, &c., as if these had been English, that he almost insisted upon instructing him in the true pronunciation, telling him that it might be of importance in the business of life. And in fact, he had scarcely learned it, before his first voyage was decided upon, and to a French port, where he was thus enabled to act as a successful interpreter.

Excepting a few lessons which he took in book-keeping from Mr. Michael Walsh, it is believed that he received no other regular instruction after leaving school. But it has been stated that Drs. Bentley and Prince rarely passed his employer's shop, without stopping to converse with him; and thus, perhaps,

by the interest he had awakened in their minds, he had secured to himself the gratuitous and invaluable assistance of the two ablest instructers whom the town then contained. The world, indeed, was his school, and Nature herself his best instructer. She offers her lessons to all, though many overlook or disregard her teachings. But his was one of those powerful intellects which only at intervals appear among men: it was stimulated and aroused to action by that sternest though best of monitors, necessity; and it mastered every thing within its reach. Dr. Bowditch never considered that the obstacles in his path had the slightest tendency to retard his progress. On the contrary, he felt that they afforded him a foothold by which that progress was rendered more sure and steady. Much as he valued all the "means and appliances" of learning, — and he did value them beyond all price, — he thought it a great disadvantage to any one to be born and educated in the midst of ease and luxury, even though surrounded with every facility for mental cultivation; since, to such a one, the needful stimulus or inducement to use the means within his reach would be almost surely wanting. He often mentioned with approbation, as containing much truth, the remark of a distinguished French mathematician to a young pupil, whose ready and intelligent answers had awakened his interest, and who, in reply to the question of his instructer, had told him his parentage and situation in life, — "Ah! I am sorry. You are too rich. You must give up mathematics." One remarkable exception, indeed, to this rule, Dr. Bowditch readily admitted in the instance of him whose genius reflected as bright a lustre on the noble house of Cavendish as had been received from it.*

* "En sorte qu'il n'y a nulle témérité à présager qu'il fera rejailler sur sa maison autant de lustre qu'il en a reçu d'elle." — *Cuvier's Eulogy on Cavendish, before the Institute of France.*

In the manuscript volumes before mentioned are often contained the precise dates at which he was studying and recording the mathematical papers there collected, and occasionally they contain mottoes or sentiments upon other subjects. Thus the title-page of one of them, under the date of December 13, 1794, has the well-known quotation, "Nullius addictus jurare in verba magistri." A minute analysis, indeed, of these volumes, in a more extended biography, might perhaps enable the reader to trace, step by step, the mental progress of Dr. Bowditch. It is only necessary, however, here to state, that he who, at the age of twenty-one years, had read the immortal work of Newton, was, even then, unsurpassed, and probably unequalled, in mathematical attainments by any one in the commonwealth. Those habits were then formed which were to render him as eminent among men of business, as, by his talents and acquirements, he was to become eminent among men of science. And his character, also, then exhibited all those beautiful and harmonious elements which it ever afterwards retained. That deep religious principle, which sustained and cheered him in the last hours of his life, had guided his boyhood, and was now the familiar and inseparable companion of his mature years; and already were displayed those various social and personal virtues, which were to render him a moral exemplar to the community in which he lived.

Dr. Bowditch began life with the same pursuits which his ancestors had followed for so many generations. Between the years 1795 and 1804, he made five voyages, — performing the first in the capacity of clerk, and the three next in that of supercargo, —

all under the command of Captain Henry Prince, of Salem. On his fifth and last voyage, he acted as both master and supercargo. He sailed upon the first of these voyages, January 11, 1795, in the ship Henry, bound to the Isle of Bourbon, and was absent exactly one year. His three next voyages were in the ship Astrea, which sailed, in 1796, for Lisbon, Madeira, and Manilla, and arrived at Salem in May, 1797; and again in August, 1798, sailed for Cadiz, thence to the Mediterranean, loaded at Alicant, and arrived at Salem in April, 1799; and in July, 1799, sailed from Boston to Batavia and Manilla, and returned in September, 1800; — and his fifth voyage was in the Putnam, which sailed from Beverly, November 21, 1802, bound for Sumatra, and arrived at Salem December 25, 1803.

He has related that, upon the first of these voyages, he carried out, as an adventure, a small box of shoes, which article proved on his arrival at the Isle of Bourbon to be in great demand. He sold them for about three times the first cost, and having made an advantageous investment of the proceeds, he returned home quite elated, and feeling that the fickle goddess had smiled upon him more propitiously than she ever had done upon any mortal before.

Of his second voyage, Captain Prince relates, that one day, when dining at the table of the American consul at Madeira, "his supercargo laid down his knife and fork, and, after squeezing the tips of his fingers for two minutes," gave to the lady of the house an answer to an intricate question which she had proposed; to the

great astonishment of her clerk, who, after a long calculation, had succeeded in solving it, and "who exclaimed that he did not believe there was another man on the island who could have done it in two hours."

During his third voyage, on the passage from Cadiz to Alicant, they were chased by a French privateer; but, being well armed and manned, they determined on resistance. The duty assigned to Dr. Bowditch was that of handing up the powder upon deck. And in the midst of the preparations, the captain looked into the cabin, where he was no less surprised than amused at finding his supercargo quietly seated by his keg of powder, and busily occupied, as usual, with his slate and pencil. He said to him, "I suppose you could now make your will," to which he smilingly assented. He did in fact give to his eldest son his instructions in regard to his last will, with the like calmness and composure, when there was not only an apparent danger, but an absolute certainty, of the near approach of death.

Upon his arrival at Manilla, during his fourth voyage, the captain, being asked how he contrived to find his way, in the face of a north-east monsoon, by mere dead-reckoning, replied, "that he had a crew of twelve men, every one of whom could take and work a lunar observation as well, for all practical purposes, as Sir Isaac Newton himself, were he alive." During this conversation, Dr. Bowditch sat "as modest as a maid, saying not a word, but holding his slate pencil in his mouth;" while another person remarked, that "there was more knowledge

of navigation on board that ship than there ever was in all the vessels that have floated in Manilla Bay." *

In his last voyage, Dr. Bowditch arrived off the coast in mid-winter, and in the height of a violent north-east snow-storm. He had been unable to get an observation for a day or two, and felt very anxious and uneasy at the dangerous situation of the vessel. At the close of the afternoon of December 25, he came on deck, and took the whole management of the ship into his own hands. Feeling very confident where the vessel was, he kept his eyes directed towards the light on Baker's Island, at the entrance of Salem harbor. Fortunately, in the interval between two gusts of wind, the fall of snow became less dense than before, and he thus obtained a glimpse of the light of which he was in search. It was seen by but one other person, and in the next instant all was again impenetrable darkness. Confirmed, however, in his previous convictions, he now kept on the same course, entered the harbor, and finally anchored in safety.† He immediately went on shore, and the owners were very much alarmed at his sudden appearance on such a tempestuous night, and at first could hardly be persuaded that he had not been wrecked. And cordial indeed was the welcome

* An interesting incidental notice of Dr. Bowditch, in the case of a black cook who could work lunar observations, may be found in Zach's *Correspondance Astronomique*, Vol. IV. p. 62.

† Upon this occasion, he had given his orders with the same decision and preciseness as if he saw all the objects around, and thus inspired the sailors with the confidence which he felt himself. One of them, who was twenty years older than his captain, exclaimed, "Our old man goes ahead as if it was noon-day!"

which he received from one who had been listening to the warfare of the elements with all the solicitude of a sailor's wife.

In his transactions with custom-house officers upon the continent of Europe, he found that they almost universally required a fee, not less for the performance of duty than for a violation of it; and several amusing instances might be mentioned as illustrating his own experience in this matter. Indeed, all his subsequent observation convinced him that there is hardly a labor or duty in life that is not rendered more light and easy by gratuitous compensation; and therefore it was always his rule, not only during these voyages, but through life, to make it *for the interest* of those about him to be upon the alert in attending to his wishes, or complying with his requests; though never did he attempt by this means to persuade any one to what he considered, in the slightest degree, a violation of duty, or breach of trust.

During these voyages, he perfected himself in the French language, and acquired a knowledge of the Italian, Portuguese, and Spanish, especially of the latter language. Thus he read through the whole of the voluminous Spanish History of Mariana, during one of these voyages; and many interesting facts there stated respecting Cardinal Ximenes and the Great Captain, &c., he distinctly remembered in his recent perusal of Prescott's Ferdinand and Isabella, — the last work which he read before his death. An interpreter, with whom he was transacting business, and whose piety consisted in the external observances of a good Catholic, cautioned him against reading so many books, lest some of them should bring him into the hands of the

Inquisition. It is worthy of remark, that it was to this acquisition of the Spanish language, and the consequent opportunity afforded him of conferring an obligation upon an active merchant in Salem, by gratuitously translating for him a Spanish protest, that Dr. Bowditch always attributed his appointment to the situation which he, a few years afterwards, obtained against a powerful competitor, and for which he was much indebted to the influence and friendship of the merchant alluded to. In view of this circumstance, and that before mentioned respecting his knowledge of French pronunciation, with other incidents of a similar character, he used to say that nothing which he ever learned came amiss. It may here be mentioned that, as late in life as the age of forty-five, he learned the German language thoroughly,* and acquired, at about the same time, a slight knowledge of Dutch. A manuscript in his library contains probably ten thousand German words and English meanings, which he had transcribed that he might better remember them. He delighted to trace analogies between different languages, and especially to discover resemblances of foreign words to those of his mother tongue, of which many striking examples were detected and mentioned by him — the *Handschuh* of the German, meaning *glove;* and the verse in the Dutch New Testament in which the stoning of

* In a letter of Dr. Bowditch to Baron Zach, dated November 22, 1822, published in Zach's *Correspondance Astronomique*, Vol. X. p. 224, he states that he had, three years previously, purchased several of the most important works of the German mathematicians, and among others Zach's *Monatliche Correspondenz*, in twenty-eight volumes, — and adds, "With this work I began to learn German, and have been amply rewarded for the labor." His own experience led him to say, that this language could be acquired, in a degree sufficient for reading all mathematical works, by studying two hours each day for four months.

Stephen is described, and where it is added that the apostles made "eenen grooten rowe over hem," &c. The serious attempt to prove that *jour* was derived from *dies*, he thought not so absurd as he might have done, had not a Spanish boy who once shipped with him, having the Christian name of *Benito*, been in the next voyage entered upon the books by the good American cognomen of *Ben* or *Benjamin Eaton*. He was often amused at discovering in the dictionary of some foreign language, a definition expressing more clearly than elegantly the precise signification of a word.* He also acquired some knowledge of Greek, but how early in life is not known. He always began to learn a language by taking the New Testament and dictionary, and attempting immediately to translate. Thus he left in his library the New Testament in more than twenty-five different dialects or languages.

But the long intervals of leisure which a sailor's life afforded, he chiefly devoted to his favorite study, pursuing with unremitting zeal those researches in which he had already made such progress, notwithstanding the interruptions and embarrassments of his earlier days. Here, with only the sea around him, and the sky above him, protected alike from all the intruding cares and engrossing pleasures of life, he especially delighted to hold converse with the master-spirits who had attempted to explain the mysteries of the visible universe, and the laws by which the great energies of nature are guided and controlled. M. Lacroix mentioned to one of the sons of Dr. Bowditch, that from him he had received several corrections and notices of errata in his works,

* See Ebers's German Dictionary, *passim*.

which our navigator had discovered during these long India voyages. And in the ship in which he sailed were witnessed not merely the labors and vigils of the solitary student, but the teachings of the kind and generous instructer, anxious and eager to impart to others the knowledge which he had himself acquired. "He loved study himself," says Captain Prince, "and he loved to see others study. He was always fond of teaching others. He would do any thing if any one would show a disposition to learn. Hence," he adds, "all was harmony on board; all had a zeal for study; all were ambitious to learn." On one occasion, two sailors were zealously disputing, in the hearing of the captain and supercargo, respecting sines and cosines. The result of his teaching, in enabling the whole crew of twelve men to work a lunar observation, has been before stated. Every one of those twelve sailors subsequently attained, at least, the rank of first or second officer of a ship. It was a circumstance highly in favor of a seaman, that he had sailed with Dr. Bowditch, and was often sufficient to secure his promotion. Connected with much testimony of this sort, is that of the uniform affability and kindness of manner displayed by Dr. Bowditch in his intercourse with all on board, which were especially calculated to increase the self-respect of the sailor, and inspire him with a due sense of his own powers, and of the importance of his occupation. In a letter from an officer in the United States navy, who sailed twice in the Astrea with Dr. Bowditch, at first as a cabin boy, and who died a few months after the friend of whom he speaks, the writer states some of the above particulars respecting Dr. Bowditch, and adds that "his kindness and attention to the poor sea-sick

cabin boy are to this hour uppermost in my memory, and will be so when his logarithms and lunar observations are remembered no more."*

It is unnecessary to state, that Dr. Bowditch discharged his duty toward his employers with the utmost fidelity and exactness. His voyages were conducted with uniform skill and success, and to their entire satisfaction. It is said by Captain Prince, that Dr. Bowditch, though he had such a thorough knowledge of navigation, knew but little of what is called *seamanship;* that he never went to see a launch in his life, &c. It is without doubt true, that the mere detail of seamanship was always irksome to him. He has often told his children that, upon common occasions, he left the management of the ship to his first officer; but upon any emergency, he was not only ready and desirous, but, as is believed, perfectly competent, to perform all the duties which could, on such occasions, be required of an experienced and practical seaman.

The following is the account of his habits when at sea, given by one who was his companion during several voyages. "His practice was to rise at a very early hour in the morning, and pursue his studies till breakfast, immediately after which he walked rapidly for about half an hour, and then went below to his studies till half past eleven o'clock, when he returned and walked till the hour at which he commenced his meridian observations. Then came the dinner, after which he was

* Charles F. Waldo, Esq., died August 31, 1838.

engaged in his studies till five o'clock; then he walked till tea time, and after tea was at his studies till nine in the evening. From this hour till half past ten, he appeared to have banished all thoughts of study, and, while walking at his usual quick pace, he would converse in the most lively manner, giving us useful information, intermixed with amusing anecdotes and an occasional hearty laugh. He thus made the time delightful to the officers who walked with him. Whenever the heavenly bodies were in distance to get the longitude, night or day, he was sure to make his observations once, and frequently twice, in every twenty-four hours, always preferring to make them by the moon and stars, as less fatiguing to his eyes. He was often seen on deck at other times, walking, apparently in deep thought, when it was well understood by all on board that he was not to be disturbed, as we supposed he was solving some difficult problem; and when he darted below, the conclusion was that he had got the idea. If he were in the fore part of the ship when the idea came to him, he would actually *run* to the cabin, and his countenance would give the expression that he had found a prize."* Another correspondent states that sometimes, when he wished to pursue his studies without disturbing those in the cabin by introducing a candle or lamp, he has seen him standing in the companion-way with his slate and pencil, working out some problem, at eleven o'clock at night, by the aid only of the binacle lamp.†

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* Judge White's Eulogy, p. 27.

† Another companion of his voyages says, "He never manifested any moral failings whatever, but was always remarkable for his strict principles of conduct, and for the utmost

Such was Dr. Bowditch's seafaring life, — not wasted in ennui or idle reveries, but every moment of it devoted to the improvement alike of his own mind and character, and those of every individual in the little world around him. Already, too, as might have been expected, he was beginning to win the honors of science; and domestic life, from which the sailor is almost wholly debarred, was preparing for him its sweetest home.

From our venerable University at Cambridge he received the highest encouragement to pursue the career upon which he had entered. In July, 1802, when his ship, the Astrea, was windbound in Boston, he went to hear the performances at the annual commencement of the College; and among the honorary degrees conferred, he thought he heard his own name announced as Master of Arts; but it was not until congratulated by a townsman and friend, that he became satisfied that his senses had not deceived him. He always spoke of this as one of the proudest days of his life; and amid all the subsequent proofs which he received of the respect and esteem of his fellow-citizens, and the distinctions conferred upon him from foreign countries, he recurred to this with the greatest pleasure. It is, indeed, made the subject of express mention in his will. It was

purity of mind and character; detesting any thing of an opposite nature, even in word. His feelings, indeed, were quick, and sometimes, though rarely, he was thought to give a too quick utterance to them; but the excitement passed off in a moment." Another says, "I have known Dr. B. intimately for more than fifty years, and I know no faults. This may seem strange; for most of your great men, when you look at them closely, have something to bring them down; but he had nothing. I suppose all Europe would not have tempted him to swerve a hair's breadth from what he thought right." — *Judge White's Eulogy*, p. 56.

gratefully repaid by the services of a long life. For the last twelve years, he was one of the select body of seven individuals intrusted with the immediate management and control of the College, having for many years before been a member of the more numerous body of Overseers, who have the general and more remote supervision of its affairs. Upon his decease, his associates in the Corporation of Harvard College state, "that he so acquired the confidence of his contemporaries, as to be regarded as the pillar and the pride of every society of which he was an active member, the effects of which never failed to be seen and acknowledged by its prosperity and success;" and they proceed to admit the benefit which that institution "has derived from the extraordinary endowments he possessed, and by which, in the exercise of his characteristic zeal, intelligence, and faithfulness, he ever sustained and advanced all its interests."

On the 28th day of May, 1799, he was chosen a member of the American Academy of Arts and Sciences. Some of the most valuable and interesting papers in its Transactions were the subsequent contributions of his pen; and the presidency of this society, to which he was elected in May, 1829, in the place of John Quincy Adams, late President of the United States, is one of the highest honors which Science offers to her votaries upon this side of the Atlantic. A letter received from the officers of the Academy bears a like honorable testimony to the merits and services of their deceased associate and President: — "It is the common fate of mankind to die, and be forgotten. It is the privilege of the just and good to be associated in the

remembrance with tender and grateful recollections. It is the destiny of minds gifted above the common lot, and acting beyond the common sphere, to involve in general regret the communities that have known their worth. It is thus that, on the present occasion, our sincere and general regret is necessarily mingled with the sadness of domestic affliction."

On March 25, 1798, Dr. Bowditch married Elizabeth, daughter of Francis Boardman, Esq., who is said to have been a lady of remarkable intelligence, and worthy of his choice. After a few months spent in her society, he went upon his third voyage, and upon his return found his home desolate. She whom he first selected as his companion, was not to be the mother of his children. His wife had died, October 18, 1798, aged only eighteen years. Dr. Bowditch felt that an alliance so abruptly terminated, did not justly entitle him to retain to his own use the property of which he thereby became legally possessed; and accordingly, he surrendered to the relatives of his late wife, every thing which he had thus acquired, including even certain small articles of plate, &c., which, but for the general character of the motive which influenced him, he would have gladly retained. Upon his second daughter and youngest child, he, many years afterwards, bestowed the name which had been borne by the wife of his youth.

On October 28, 1800, he married his cousin Mary, the only daughter of his uncle, Jonathan Ingersoll, Esq. She was then scarcely nineteen years of age, having been born December 4, 1781. Her father had been an active ship-master, and

was then living upon his estate in Danvers, from which, more than twenty-five years ago, he removed to Windsor, Vermont, where he still cultivates a farm upon the beautiful banks of the Connecticut, finding in the cares and labors of husbandry, at the advanced age of eighty-eight years, a pleasure greater than he ever experienced amid the more stirring scenes of his youth. Long may his honorable and peaceful life be preserved! This marriage, which lasted more than thirty-three years, may be regarded as the most happy circumstance of Dr. Bowditch's life. With personal attractions of no common order, domestic in her habits, of the most lively and cheerful disposition, with affections which age never chilled, governed ever by the strictest religious principle, the wife and mother was devotedly attached to her husband and children, sympathizing in the pursuits of the former, and guiding and directing those of the latter, making home the scene of the purest and most delightful influences and recollections, and associating with her presence in life and her memory in death, the idea of a being whose every act and thought were blameless. The stranger was attracted by her winning smile and affable manners. She made her house the agreeable resort of friends and visiters. Many sons and daughters of sorrow acknowledged in her that active benevolence and liberal aid which discovered and supplied their wants, or that kindly sympathy which soothed where it could not relieve. But there was one who was her heart's idol, whom she reverenced almost as a being of a higher order than herself, regarding as worthless every thing else, in comparison with his approving smile. He, indeed, had reason always to rejoice, that a benignant Providence had made her the sharer and the guardian

of his home and his happiness. That bosom, where his head had reposed in life, with undoubting faith and trust, was the fittest pillow upon which it could be placed for its final rest in death!

The most important result of this period of Dr. Bowditch's life, was the publication of *The New American Practical Navigator*, a manual in which were imbodied a scientific explanation of the principles of navigation, and also the practical application of these principles in the simplest and most effective manner.* Dr. Bowditch had prepared for publication two editions of the treatise of John Hamilton Moore, with notes and corrections, and in preparing a third revised edition of that work, he corrected so very many errors, that, in 1802, he was induced to publish it under his own name. From that time to the present, it has been exclusively used by every ship-master who has sailed from this country, and its tables and rules have been adopted in the works used in England and elsewhere. Into the original work, and the eight succeeding editions, many improvements, of great practical utility, have from time to time been introduced. Thus in the last edition, published in 1837, "the body of tables has been increased from thirty-three to

* This work is mentioned by Zach, in his *Correspondance Astron.*, Vol. VI. p. 206, A. D. 1822, who gives the entire title-page of the third edition, printed at Newburyport; and in Vol. VII. p. 167, is an example taken from it. In Vol. X. p. 234, A. D. 1824, we find the title-page of the fifth edition, printed in 1821. And many other notices occur in the same journal, of astronomical methods given by Dr. Bowditch in this work, which, as they were also the subjects of particular communications made by him to the American Academy, will be noticed hereafter.

fifty-six, some being entirely new, and others essentially improved or corrected."* The successive additions thus made by the author, have prevented the competition of any other work. More than eight thousand errors were corrected by Dr. Bowditch in his first edition of it under his own name; and when it is considered that one of these was no less than the very criminal inattention of setting down the year 1800 as a leap year, in the tables of the sun's declination,† thereby making a mistake in some of the numbers of twenty-three miles, and causing the actual destruction of several ships, and the imminent danger of others, some idea may be formed of the great service thus rendered by him to the cause of nautical science.‡ The amount of labor requisite for insuring accuracy in the tables, by actually going through all the calculations necessary to a complete examination of them, was immense almost beyond conception. The following striking contrast is presented by the modest Preface of the American editor, and the boasting language of the original compiler. The one says, that "the author had once flattered himself that the tables of this collection which did not depend on observations, would be absolutely correct; but

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* Eulogy on Nathaniel Bowditch, LL. D., President of the American Academy of Arts and Sciences; including an Analysis of his scientific Publications; delivered before the Academy, May 29, 1838; by John Pickering, Corresponding Secretary of the Academy; p. 13.

† See Preface to the last edition of the work.

‡ For many interesting details respecting this work, see "A Discourse on the Life and Character of the Hon. Nathaniel Bowditch, LL. D., F. R. S., delivered in the Church on Church Green, [Boston,] March 25, 1838; by Alexander Young;" pp. 34 to 39;—and Mr. Pickering's Eulogy, p. 10, &c., and Notes, pp. 84 to 87.

in the course of his calculations, he has accidentally discovered several errors in two of the most correct works of the kind extant, viz., Taylor's and Hutton's Logarithms, notwithstanding the great care taken by those able mathematicians in examining and correcting them. He therefore does not absolutely assert that these tables are entirely correct, but feels conscious that no pains have been spared to make them so." The other says, that "he sells no *sea-books*, charts, or instruments, but such as may be depended on; consequently he excludes all those *old, inaccurate, and erroneous publications*, the depending upon which *has often proved fatal to shipping and seamen.*" * The following is the summary elsewhere given of this work: It "has been pronounced by competent judges to be, in point of practical utility, second to no work of man ever published. This apparently extravagant estimate of its importance, appears but just, when we consider the countless millions of treasures and of human lives which it has conducted, and will conduct, in safety through the perils of the ocean. But it is not only the best guide of the mariner in traversing the ocean; it is also his best instructer and companion every where, containing within itself a complete scientific library, for his study and improvement in his profession. Such a work was as worthy of the author's mind, as it is illustrative of his character; — unostentatious, yet profoundly scientific and thoroughly practical, with an effective power and influence of incalculable value." † So, also, the London Athenæum says of this work, "It goes, both in American and British craft, over every sea of the globe, and is probably the best work of the sort ever published."

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* Mr. Pickering's Eulogy, p. 11. † Judge White's Eulogy, p. 29.

Dr. Bowditch, however, did not himself consider this work as one which would much advance his scientific reputation. It was, in his view, only a "practical manual."* But it was the work by which, almost exclusively, he was, for a long time, known in this country, and it laid the basis of a wide-spread popularity, such as few, if any, works upon scientific subjects have ever gained for their authors. Several years ago, he was much amused by the following incident. Two young men came into the shop of his bookseller to purchase a copy of the Navigator. Upon being shown one bearing on its title-page the number of the edition, and purporting to have been revised and corrected by the author, one said to the other, "That is all a mere cheat; the old fellow must have been dead years ago!" They were astonished, and perhaps a little embarrassed, at being introduced to an active, sprightly gentleman, in full health and good spirits, as the author of this work, which they had known from their earliest entrance upon a sailor's life. It was in honor, especially, of the memory of him who had written the Practical Navigator, that,

* Dr. Bowditch, in his letter to Baron Zach, *Corr. Ast.* Vol. X. p. 225, says, "You will see that I have studiously avoided all *scientific parade*, and have published the work according to the method of instruction used in our country, where we prefer, in these matters, practice to theory." Thus, owing to the errors incident to all nautical observations, he deemed it useless to aim, in the nautical tables, at the most minute degree of exactness, but only at that measure of it which was requisite for practical purposes; so that these tables might be used with the greatest possible promptness, and might, at the same time, lead to the greatest accuracy of result which was in fact really attainable. And he, in this letter, states that he is delighted to find that Zach, in a previous publication, concurs in this opinion. Upon this the editor remarks, p. 244, "mais c'est à nous de nous féliciter de nous trouver d'accord avec un navigateur d'une si grande expérience; la nôtre n'est qu'une induction."

when the news of his death was received at Cronstadt, all the American shipping, and many of the English and Russian vessels, hoisted their flags at half-mast in that naval depôt of the Czars, — a tribute of respect which had been previously paid in the ports of Baltimore, Boston, and Salem. From the same motive, the badge of mourning was adopted by the members of the Naval School of the United States, as for the loss of a valued friend and instructer.

Immediately upon the close of his seafaring life, Dr. Bowditch was elected President of the Essex Fire and Marine Company, which situation he held till his removal to Boston, in 1823. Here, also, he displayed his usual good judgment and discretion, and his usual success attended him. It was, indeed, an office for which he was eminently qualified by his whole previous life. After paying to the stockholders an average annual dividend of ten or twelve per cent. for the whole twenty years of his presidency, he left the institution with a large surplus of profits earned. In this situation, where he was necessarily brought more in contact with men of business than ever before, his easy and affable manners soon made him generally known; and the intrinsic excellences of his character made him no less generally beloved and respected.

During the years 1805, 1806, and 1807, he employed himself in making a survey of the harbors of Salem, Marblehead, Beverly, and Manchester; and the result of his labors was a chart of remarkable beauty and exactness, upon which all the old and familiar landmarks of the pilots, though not known by him to be

such, were so accurately placed in their true distances and bearings, as to excite among them the greatest surprise.

His principal occasional labors, during his residence in Salem, consisted of twenty-three contributions to several volumes of the Transactions of the American Academy of Arts and Sciences, of which the following is an accurate list: —

VOLUME SECOND. PART SECOND.

Published in 1800.

1. *New Method of working a Lunar Observation.*

The object of this method was to establish a uniform rule for the application of corrections, so that there should be no variation of cases resulting from the distance and altitude of the observed bodies. Dr. Bowditch says of this method, in a note, that "it was written several years ago, and before the publication of the Transactions of the Royal Society for 1797, in which is inserted a method somewhat similar, invented by Mr. Mendoza y Rios. An appendix to the New Practical Navigator has lately been published, in which the corrections are all additive, and the work is shorter." It is particularly noticed and commended in the *Connoissance des Tems*, (1808,) then published under the direction of M. Delambre.*

* Zach (*Corr. Astron.*, Vol. VI. p. 553, A. D. 1822) says, "M. *Bowditch* dans son *New american practical navigator* a aussi donné pour la réduction des distances lunaires une nouvelle méthode abrégée, avec des tables, qui mérite d'être plus connue; aucun auteur européen n'en a encore parlé; il vient de la perfectionner dans sa quatrième édition stéréotype publiée à New York en août 1817. Nous la recommandons à l'attention des professeurs et auteurs des traités de navigation." In Vol. X. p. 321, A. D. 1824, he says, "La méthode de M. *Bowditch* a l'avantage sur toutes les autres méthodes d'approximation, que toutes les corrections sont toujours additives, et qu'on n'a jamais besoin de faire attention à des cas

VOLUME THIRD. PART FIRST.

Published in 1809.

2. ***Observations on the Comet of*** **1807.** [pp. 1—18.]

3. ***Observations on the total Eclipse of the Sun, June*** **16, 1806,** ***made at Salem.*** [pp. 18—23.]

In a note to this communication, Dr. Bowditch makes, as is believed, the first public mention of an error in Laplace's *Mécanique Céleste*, in the estimate of the oblateness of the earth, as calculated from the observed length of pendulums; showing that Laplace's result ought to have been, upon his own principles, $\frac{1}{315}$ instead of $\frac{1}{336}$.

4. ***Addition to the Memoir on the Solar Eclipse of June*** **16, 1806.** [pp. 23—33.]

5. ***Application of Napier's Rules for solving the Cases of Right-angled Spheric Trigonometry to several Cases of Oblique-angled Spheric Trigonometry.*** [pp. 33—38.]

This communication so alters Napier's rules, as to make them include most of the cases of oblique-angled spheric trigonometry, and is marked by the same neatness, elegance, and simplicity, which characterized his first communication. These rules are now familiarly known in the text-books of Harvard College as "Bowditch's Rules."

VOLUME THIRD. PART SECOND.

Published in 1815.

6. ***An Estimate of the Height, Direction, Velocity, and***

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particuliers; les règles sont générales;" and proceeds to give a detailed account of it.—See also note to article 15.

Magnitude of the Meteor that exploded over Weston, in Connecticut, December 14, 1807. [pp. 213—237.]

This communication is of a very interesting character, and it rests upon numerous observations collected with great labor and assiduity. Dr. Bowditch considers the meteor in question to have had a course about eighteen miles above the earth, a velocity of more than three miles a second, and a probable cubic bulk of six millions of tons — which others have estimated to be the contents of the pyramid of Cheops.*

7. *On the Eclipse of the Sun of September* 17, 1811, *with the Longitudes of several Places in this Country, deduced from all the Observations of the Eclipses of the Sun, and Transits of Mercury and Venus, that have been published in the Transactions of the Royal Societies of Paris and London, the Philosophical Society held at Philadelphia, and the American Academy of Arts and Sciences.*† [pp. 255—305.]

8. *Elements of the Orbit of the Comet of* 1811. [pp. 313—326.]

In this, as in his second communication, he arrived at his results after almost incredible labor, rendered necessary by the want of the

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* The *Zeitschrift für Astronomie*, Vol. I. p. 37, A. D. 1816, gives the results arrived at in this communication, and calls it "einer interressanten Arbeit."

† The *Zeitschrift für Astronomie*, Vol. I. p. 90, A. D. 1816, mentions the observations of the eclipses of the sun, June 16, 1806, and September 17, 1811, as contained in these volumes, &c., and states that "Bowditch hat den grössern Theil davon zu Längenbestimmungen benutzt und zugleich dabey, für eine Menge amerikanischer Orte, Hülfsgrössen zur leichtern Berechnung des Nonagesimus gegeben;" and Zach, in his *Corr. Astron.* Vol. X. p. 494, A. D. 1824, has a table of the longitudes and latitudes of places determined by astronomical observations calculated by Dr. Bowditch.

improved methods of the present day.* The original volume, containing his calculations in the case of this latter comet, now preserved in his library, contains one hundred and forty-four pages of close figures, probably exceeding one million in number, though the result of this vast labor forms but a communication of twelve pages.†

9. ***An Estimate of the Height of the White Hills in New Hampshire.*** [pp. 326—328.]

10. ***On the Variation of the Magnetic Needle.*** [pp. 337—344.]

This communication, in like manner, which is of quite an interesting character, and of considerable practical importance, was the result of five thousand one hundred and twenty-five observations, during a period of four years.

11. ***On the Motion of a Pendulum suspended from two Points.*** [pp. 413—437.]

This communication is also one of interest and value; and the little wooden stand, from which a leaden ball was suspended, still exists, to remind us of the zeal and assiduity with which Dr. Bowditch watched the various curves and lines which the ball described.‡

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* See Dr. Bowditch's letter (Zach, *Corr. Astron.* Vol. X. p. 228) before referred to, where this fact is stated. The editor, in p. 248, gives the elements of the orbits of the comets calculated by Dr. Bowditch wholly from American observations.

† Mr. Encke, in speaking to a friend of Dr. Bowditch, at Berlin, in 1836, said that he had known him from the time when this paper appeared; and that he had never seen an American since, without asking him what he could tell him about its author;—and the *Zeitschrift für Astronomie*, Vol. I. p. 44, gives an account of this communication "von dem amerikanischen Astronomen Bowditch."

‡ This subject is mentioned in his letter to Baron Zach, before alluded to, (*Corr. Astron.* Vol. X. p. 227.) The editor, in his note, p. 246, says the remarkable variety of the

12. ***A Demonstration of the Rule for finding the Place of a Meteor, in the second Problem, page 218 of this Volume.*** [pp. 437—439.]

VOLUME FOURTH. PART FIRST.

Published in 1818.

13. ***On a Mistake which exists in the Solar Tables of Mayer, Lalande, and Zach.**** [pp. 2, 3.]

14. ***On the Calculation of the Oblateness of the Earth, by Means of the observed Lengths of a Pendulum in different Latitudes, according to the Method given by***

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motions of a pendulum thus suspended, and the very curious experiments of Professor Dean, who explains, in this mode, the apparent motion of the earth as seen from the moon, engaged Dr. Bowditch in the examination of the theory of these motions. The result has been, he adds, "une recherche très intéressante." "Comme ce mémoire mérite d'être mieux connu, et qu'il ne l'est pas généralement, vu la difficulté de se procurer des livres américains, nous en donnerons la traduction dans un de nos cahiers."

* Dr. Bowditch states, that "The attraction of Jupiter produces an equation in the expression of the Sun's distance from the Earth, and a Table is given for its computation, by Mayer, in 1770," &c.; "and ever since this Table was first published, which is about fifty years, an error of six signs has always existed in the argument by which the correction is found; so that, when the equation is really *subtractive*, it will frequently be found by the Table to be *additive*, and the contrary." — "In De Lambre's Solar Tables, published in 1806, the form of the table is wholly altered, the method of entry by a double argument being used; and by thus taking a different path, the error is avoided, without noticing that it really does exist in the other works."

Baron Zach, in his *Monatliche Correspondenz*, Vol. VIII. p. 449, A. D. 1803, says that Bowditch, an American astronomer, has called his attention to this mistake; and, after admitting its importance, frankly adds, "Allen Astronomen, welche sich mit Verfertigung der Sonnen-Tafeln beschäftigt haben, einen *La Caille*, *Tob. Mayer*, *La Lande*, *De Lambre* und *mir* ist dieser Fehler entgangen."

Laplace, in the Second Volume of his "Mécanique Céleste;" with Remarks on other Parts of the same Work relating to the Figure of the Earth. [pp. 3—24.]

The object of this communication is to correct certain errors in the article "EARTH" in Rees's Cyclopædia, to the end that currency should not be given to inaccurate ideas on the subject, by that popular work.

15. ***Method of correcting the apparent Distance of the Moon from the Sun, or a Star, for the Effects of Parallax and Refraction.*** [pp. 24—31.]

This is but the rule given in the Practical Navigator, making all the corrections in question additive. It is another instance of the simplicity at which he always aimed in his rules and formulas.*

16. ***On the Method of computing the Dip of the Magnetic Needle in different Latitudes, according to the Theory of Mr. Biot.*** [pp. 31—36.]

17. ***Remarks on the Methods of correcting the Elements of the Orbit of a Comet, in Newton's "Principia" and in Laplace's "Mécanique Céleste."*** [pp. 36—48.]

This communication proves that two equations in the Principia, the accuracy of which several commentators upon that work had

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* In Zach's *Monatl. Corres.*, Vol. XVII. p. 411, A. D. 1808, this method is mentioned as being in the Appendix to the New American Practical Navigator, printed at Newburyport, 1804; and the editor says, "Der Verfasser ist ein Americaner, Bowditch, und Delambre hat es der Mühe werth gehalten, eine umständliche Darstellung dieses Verfahrens zu geben." Then follows a somewhat minute account of the method. — See note to article 1.

attempted to prove, and as to which no doubts had yet been expressed or insinuated, always made the corrections in question "double of what they ought to be," and restricts the method of Laplace as appropriate only where the number of observations is small.

18. ***Remarks on the usual Demonstration of the Permanency of the Solar System, with Respect to the Eccentricities and Inclinations of the Orbits of the Planets.*** [pp. 48—51.]

19. ***Remarks on Dr. Stewart's Formula for computing the Motion of the Moon's Apsides, as given in the Supplement to the Encyclopædia Britannica.*** [pp. 51—61.]

This is a very curious and interesting communication. A method which, notwithstanding doubts had been expressed respecting it, had been sanctioned as accurate by Dr. Hutton, by Lalande, and Playfair, — the latter of whom even considered its accuracy to have been demonstrated, — is in this memoir proved to have been true only in the particular case supposed; and it is shown that, as a general method, it wholly fails.

VOLUME FOURTH. PART SECOND.

Published in 1820.

20. ***On the Meteor which passed over Wilmington, in the State of Delaware, November 21, 1819.*** [pp. 3—14.]

21. ***Occultation of Spica by the Moon, observed at Salem.*** [p. 14.]

22. ***On a Mistake which exists in the Calculation of Mr. Poisson relative to the Distribution of the Electrical Matter upon the Surfaces of two Globes, in Vol. XII.***

of the "Mémoires de la classe des sciences mathématiques et physiques de l'Institut Impérial de France." [pp. 15—17.]

23. *Elements of the Comet of* 1819.* [pp. 17—19.]

Besides the above contributions to the Memoirs of the American Academy, Dr. Bowditch was the writer of several other articles, among which may be mentioned the following: —

1. *Notice of the Comet of* 1807. Published in the Monthly Anthology for December, 1807, Vol. IV. [pp. 653, 654.]

2. *Review of a "Report of the Committee (of Congress,) to whom was referred, on the 25th of January,* 1810, *the Memorial of William Lambert, accompanied with sundry Papers relating to the Establishment of a First Meridian for the United States, at the permanent Seat of their Government."* Published in the Monthly Anthology for October, 1810, Vol. IX. [pp. 245—266.]

   This article occupies twenty-one pages, and proves very conclusively the great advantages of continuing to estimate the longitude from Greenwich, which Mr. Lambert considered "a sort of degrading and unnecessary dependence on a foreign nation," and an "encumbrance unworthy of the freedom and sovereignty of the American people." This Memorial the reviewer shows to be "a compilation, with needless repetitions and palpable mistakes, evincing a great want of knowledge in the principles of the

* For a statement of Dr. Bowditch's communications to the Memoirs of the Academy, and an abstract of their contents, from which several of our remarks in the text are condensed, see Mr. Pickering's Eulogy, pp. 17—31.

calculations;" and that, "both as respects its object and execution, it was wholly undeserving the patronage of the National Legislature."

3. ***Defence of the Review of Mr. Lambert's Memorial.*** Published in the Monthly Anthology for January, 1811, Vol. X. [pp. 40—49.]

Mr. Lambert having made an angry reply, charging his reviewer with "twistical cunning," "ingenious quibbling," "zeal for the honor of the British nation, and the convenience of British mariners," and challenging him "to examine his computation of the longitude of the Capitol at Washington from Greenwich, *and to point out a mistake that can be made palpable*," — Dr. Bowditch, in this reply, considers these charges of Mr. Lambert as beneath his notice, but accepts his challenge, and proves *that there is an error in every one of the six examples he has given.*

These two papers were fatal to the proposed project; and, fortunately for the interests of science, Greenwich continues to be the first meridian of all who speak the English language.

4. ***Review of "A Treatise on the most easy and convenient Method of computing the Path of a Comet, from several Observations; by William Olbers, M. D.; Weimar, 1797;" — and of "Theoria Motus Corporum Cœlestium in Sectionibus Conicis Solem ambientium;" by Charles Frederick Gauss; Hamburg,*** 1809. Published in the North American Review for April, 1820, Vol. X.* [pp. 260—272.]

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* A copy of this article Dr. Bowditch sent to Baron Zach, with the letter before referred to, *marking a part of it as written by Mr. Everett, the editor.* Zach publishes

This article gives an account of several German astronomers and their most noted periodical publications. Thus it contains a notice of Dr. Olbers — "the Columbus of the planetary world" — and of Gauss, the authors of the two works reviewed; an account of Bode's *Astronomisches Jahrbuch*, Zach's *Monatliche Correspondenz*, and the *Zeitschrift für Astronomie*. It states the fact that, "out of *thirteen* primary planets and satellites, discovered since the year 1781, we are indebted to persons born in Germany for *twelve*; and that, in the determination of the orbits of these new bodies, they have done more than all the other astronomers in the world."

5. ***Review of "A remarkable Astronomical Discovery, and Observations of the Comet of July, 1819; by Dr. Olbers of Bremen; published in Bode's Astronomisches Jahrbuch for 1822;"*** [and of two other articles in the same work, for the years 1822 and 1823, on the same subject, by Professor Encke of the Ducal Observatory at Seeberg, near Gotha.] Published in the North American Review for January, 1822, Vol. XIV. [pp. 26—34.]

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extracts from it in his notes upon this letter, Vol. X. p. 231, and says, "It will be interesting to the reader to learn how men of science in America render justice to those of Germany, while they reproach their brethren beyond the water for the little attention which they have bestowed upon our productions." Dr. Bowditch mentions in this review an interesting paper which Mr. Ivory had published in the Transactions of the Royal Society of London, 1814, giving a method of his own for computing the orbit of a comet, which, "upon examination, turns out to be nothing more than that which Dr. Olbers had published in his work above seventeen years before, although this coincidence must have been wholly unknown to Mr. Ivory, and to the other members of the Royal Society. We consider this as a striking instance of the little attention paid in Great Britain to works of mathematical science printed in Germany." The passage added by Mr. Everett was merely that which states a like neglect of German *literature*.

A copy of this article on Encke's comet Dr. Bowditch also sent with the letter before mentioned, to Baron Zach, who, in his notes, states that Dr. Bowditch "has here collected all that has been said and done respecting this famous comet." In the concluding paragraph of this article, the reviewer expresses his regret that, "while Great Britain alone can boast of more than thirty public and private observatories of considerable note, we have not, in the whole United States, one that deserves the name." He also speaks of the duties imposed on the importation of mathematical instruments and scientific works, as *fines* and *penalties*, which had been justly called "a bounty upon ignorance," &c. This whole paragraph is extracted by Zach, (Vol. X. p. 245,) and he says, "Voici de quelle manière un bon républicain exhale son chagrin en public; c'est au moins *quelque chose*," &c.

6. ***Letter to Baron Zach, dated November 22, 1822; with a Postscript, dated December 20, 1823.*** Published in his Correspondance Astronomique for the year 1824,* Vol. X. [pp. 223—230.]

7. ***Review, entitled "Remarks on several Papers published in former Volumes of this Journal;"*** [the first being remarks on "A New Algebraical Series, by Professor Wallace, of Columbia, S. C.;"] published in Silliman's Journal for 1824, Vol. VIII. [pp. 131—139;] — and ***Remarks on Mr.***

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* This letter has been already more than once referred to, and contains many interesting facts. The editor's comments upon it occupy twenty pages. With this letter Dr. Bowditch had sent, besides his articles mentioned in the two last preceding items, a copy of the fifth edition of the Practical Navigator. The editor says of him, "C'est le premier, et jusqu'à-présent le seul grand géomètre en Amérique."

Wallace's Reply; **published in the same Journal for 1825, Vol. IX.** [pp. 293—304.]

The reviewer expresses his surprise that any offence should have been given by the mere statement of the *historical fact* that this "new series" was but the usual development of the binomial theorem, and the same which had been given by Euler fifty years before.*

8. *Review of "Fundamenta Astronomiæ," by Frederick William Bessel;* 1818; — *of the Tables of the Moon, by M. Burckhardt;* 1812; — *of the New Tables of Jupiter and*

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* Professor Wallace, in his Reply, states that he did not claim the series as *new*, and appeals to a reference which he had made in his original article to Mr. Stainville, &c., and, not knowing who his opponent was, says that he does not, like his reviewer, refer his readers "to the *Complement des Eléméns d'Algèbre, however useful as a school-book*," &c. He also states, "that the results which Euler has given do not include a single case of a transcendent function, and were only given as examples of the applications of the simplest case of the binomial theorem," &c. Dr. Bowditch, in his rejoinder, mentions the vague terms in which Mr. Stainville had been originally referred to, and says, "It now appears that Mr. Stainville gave it as new for the *first* time in 1818, and Professor Wallace for the *second* time in 1824, Euler's having been published in 1775:" and again; "It is believed that most persons, after reading what Professor W. has written, would suppose he claimed some, if not a very large portion, for his own. But the real fact is, that *none* of it is *his*. The whole of the first seven pages, and a large portion of the two remaining pages, of Professor W.'s first communication, are merely literal translations from Stainville and Gergonne; and what is not copied from them is quite unimportant." He also says, "It is a fact, *notwithstanding the positive declaration of Professor W. to the contrary*, that Euler's demonstration is not restricted to this very simple case, but is general for all values of the exponent, whether integer, fractional negative, or surd; and it is characterized by Lacroix as being elegant and rigorous." This review will be found quite amusing and *piquant*. It is, like the articles on Mr. Lambert's Memorial, both as to matter and style, a fair specimen of Dr. Bowditch's powers as a controversial writer.

of Saturn, by M. Bouvard; 1808; — *of the Tables of the Satellites of Jupiter, &c., by M. Delambre;* 1817; — *of the Tables of Venus, of Mars, and of Mercury, by B. de Lindenau;* 1810, 1811, *and* 1813; — *and of the Memoir on the Figure of the Earth, by M. de Laplace;* 1817 *and* 1818.* Published in the North American Review for April, 1825, Vol. XX. [pp. 309—367.] †

This brief but most comprehensive article upon modern astronomy will be found to possess an uncommon degree of interest. It consists of a series of biographical sketches, in which are described all who have been remarkable for the successful cultivation of physical science in modern times, bringing into view their actual and relative services and merits, and awarding to each the degree of approval to which he was entitled; — the writer now dwelling with enthusiasm upon his favorite Lagrange, now bestowing a more qualified and guarded approbation, or a positive censure, upon others inferior in powers and attainments to that distinguished mathematician, or opposite to him in character.‡ It comprises,

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* The titles of the particular works reviewed, are here given in an abridged form.

† In the Notes to Mr. Pickering's Eulogy, p. 95, a list is given, without comment, of six of the above eight articles, the fifth and seventh not being noticed. All these occasional publications of Dr. Bowditch, excepting the letter to Baron Zach, were collected by him in two volumes, now in his library.

‡ Thus he says, "Upon the decease of Euler, Lagrange remained undisputedly the greatest mathematician then living," &c.; while of Dr. Bradley's successor he says, "Dr. Bliss was wholly unworthy of the office of astronomer royal. The account of his life by La Lande is comprised in less than a dozen words — 'Bliss était astronome royal; il mourut en 1765.'" This article is the one, of all Dr. Bowditch's occasional publications, which exhibits in the clearest light his peculiar talents and acquirements. Evidently the work of one possessing a knowledge of the actual state of mathematical science, in its various departments,

especially, a very full account of Dr. Bradley's observations, and of Bessel's services in reducing them; of the best makers of mathematical instruments — Graham, Bird, Ramsden, Troughton, Jones, Reichenbach, Frauenhofer, Herschel, &c.; of the successive astronomers royal at Greenwich, and of the other chief European observers; and, lastly, "it gives an account of the labors of those mathematicians who have improved the science of astronomy by their calculations of the effects of the mutual attractions of the heavenly bodies."

Dr. Bowditch was also, for many years, a contributor to the Annalist and Mathematical Diary, solving every question there proposed, in his usual style of simple elegance. He also wrote or corrected various articles in the American edition of Rees's Cyclopædia. And all these various publications were the employment merely of those leisure hours which were left to him after all the calls of active business, and all the claims of social and domestic life, had been most fully answered; and more than this, and notwithstanding all these duties and engagements, and all the occasional scientific labors which have been mentioned, such was his wonderful economy of time, that, within the same period, he also completed what has justly been characterized as the gigantic undertaking of making the Translation and Commentary now before the reader, — a work upon which, almost exclusively, will rest his fame as a man of science.*

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as extensive and minute as was possessed by any individual then living, — it is, throughout, a record of the most sound and impartial criticism. Any biography of him, which has not this review in an appendix, must be incomplete.

* Baron Zach, in his *Correspondance Astronomique*, Vol. X. p. 234, A. D. 1824, says, "Nous finirons cette note par apprendre à nos lecteurs ce que nous a révélé le professeur

Upon recurring to the Translator's Preface, in the first volume, it will be found there stated that "the notes were written at the time of reading the volumes, as they were successively published. The translation was made between the years 1814 [misprinted 1815] and 1817, at which time the four first volumes, with the several appendices and notes, were ready for publication." The fifth volume, published by La Place twenty years after the others, was never translated by Dr. Bowditch, though he wrote many important notes upon it.* It was his intention, however, had he lived, to translate the volume. Death has defeated forever that intention. The work which he had so nearly completed, no one lives to finish as he would have finished it; but, like the beautiful painting from which was taken the engraving prefixed to this memoir, and which never received the final touch of the dying artist, it is the more interesting from the circumstances under which it was left incomplete.

Everett, que M. *Bowditch* a traduit en anglais toute la *Mécanique Céleste* de M. *La Place*, avec un ample commentaire, mais qu'on n'a pu encore le persuader de publier cet ouvrage qui ne pourrait que lui faire un honneur infini, ainsi qu'à son pays, mais nous soupçonnons qu'il attend pour cela l'ouvrage de MM. *Plana* et *Carlini*, qui est sur le métier, et qui ne tardera pas à paraître." A similar public announcement of this fact had been made in the North American Review for April, 1820, Vol. X. p. 272; and the editor says that Dr Bowditch "has not, however, yet been prevailed upon to do honor to himself and to his country, by the publication of so great and arduous a work."

* A day or two only before his death, he received from Europe a translation, executed by a young lady whom he had never seen, but who was soon to become his daughter, embracing in seventy manuscript pages the first part of the fifth volume; — a suitable offering of filial duty to one who never lived to thank her in person for her kindness, but who left for her at his decease an affectionate letter, written exactly a week before his death.

As, in the course of publication, it became necessary to incorporate into the notes much additional matter, owing to the subsequent progress of mathematical science, they were all, in a great measure, rewritten; and thus, perhaps, the present four volumes will be found to contain almost every thing of importance in the whole five volumes of the original work, excepting what relates to the earth's temperature and the velocity of sound.* Still, it was Dr. Bowditch's intention to introduce into the fifth volume more original matter than into either of the preceding ones, making it, as it were, the general depository alike of all the results of his extensive theoretical investigations, and of the practical experience of a long life. It was, especially, a source of regret to him, that he could not prepare the Index to the work, which he felt assured, from his intimate knowledge of its contents, and of the relative importance of the different matters of which it treats, he was more competent to prepare than any one else. That duty, we believe, however, will at a future time be ably performed by a friend, (Benjamin Peirce, Esq., Professor of Mathematics in Harvard University,) whose revision of the entire work, when in the process of publication, and vigilance in detecting typographical errors, Dr. Bowditch always valued as an additional means of insuring its accuracy.

It would not be our desire, were we competent to the task, to offer any criticism upon the present work. It will itself speak to every reader. A few remarks, however, upon the motives, views, and objects of the translator may not be inappropriate.

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* Mr. Pickering's Eulogy, p. 54.

In the first place, then, his great design was to supply those steps in the author's demonstrations, which were not discoverable without much study and research, and which had rendered the original work so abstruse and difficult, as to lead a writer in the Edinburgh Review to say there were not twelve individuals in Great Britain who could read it with any facility.* Dr. Bowditch himself was accustomed to remark, "Whenever I meet in La Place with the words 'Thus it plainly appears,' I am sure that hours, and perhaps days, of hard study will alone enable me to discover *how* it plainly appears." So important did he consider the object which he thus had in view, that every letter which he received, proving to his satisfaction the fact of some young man's having read his Translation and Commentary, afforded him much more pleasure than the favorable mention of it in popular journals, or even than the flattering approbation bestowed by competent judges; since, while the one would be but an opinion, the other would be *a proof*, that the great end of his labors had been accomplished. He received several such letters. M. Lacroix wrote to him that he had recommended the work to a young professor at Lausanne. There can, indeed, be no doubt

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* "We will venture to say, that the number of those in this island who can read that work with any tolerable facility, is small indeed. If we reckon two or three in London and the military schools in its vicinity, the same number at each of the English Universities, and perhaps four in Scotland, we shall hardly exceed a dozen; and yet we are fully persuaded that our reckoning is beyond the truth." — *Edinburgh Review*, 1808, Vol. XI. p. 281.

In America, two, and perhaps three persons, besides Dr. Bowditch, were able to read the original work critically; but a competent judge has doubted whether the whole of it had been so read even by one.

that it has been truly said by a late foreign review,* respecting this Translation and Commentary, "a work which existed in mere abstraction before, has been made as accessible, to all public and popular purposes, as its essential nature would permit;" and by another review,† "the notes to each page leave no step in the text, of moment, unsupplied, and hardly any material difficulty of conception or reasoning unelucidated."‡ Mr. Babbage, in a letter to the translator, August 5, 1832, says, "It is a proud circumstance for America, that she has preceded her parent country in such an undertaking; and we in England must be content that our language is made the vehicle of the sublimest portion of human knowledge, and be grateful to you for rendering it more accessible."

A second great object of the translator was, to continue the original work to the present time, so that it should place in possession of the reader the many recent improvements and discoveries in mathematical science. That the most eminent living mathematicians consider this end to have been attained, clearly appears by the following extracts from letters addressed by them to Dr. Bowditch, and now before us: — M. Lacroix says, July 5, 1836, "I am more and more astonished at your continued perseverance in a task so laborious and

* London Athenæum, 1838.

† London Quarterly Review, Vol. XLVII. p. 558.

‡ An English professor of mathematics, who was at Rome in the winter of 1836–1837, told a friend of Dr. Bowditch, that he was indebted to these notes for his knowledge of La Place; and that, though he did not expect to be very long absent from England, he had ordered the next volume to be sent after him to Italy, if it should appear before his return home.

extensive. I perceive that you do not confine yourself to the mere text of your author, and to the elucidations which it requires; but you subjoin the parallel passages and subsequent remarks of those geometers who have treated of the same subjects; so that your work will embrace the actual state of science at the time of its publication." — M. Legendre, in a letter dated at Paris, July 2, 1832, says, "Your work is not merely a translation with a commentary; I regard it as a new edition, augmented and improved, and such a one as might have come from the hands of the author himself, if he had consulted his true interest, that is, if he had been solicitously studious of being clear," &c. — Mr. Bessel, also, in a letter dated at Königsberg, February 18, 1836, writes, "Through your labors on the Mechanism of the Heavens, La Place's work is brought down to our own time, as you add to it the studies of geometricians since its first appearance. You yourself enrich this science by your own additions, for which especial obligations are due to you." — M. Puissant (in a letter dated May 31, 1835, and addressed to D. B. Warden, Esq., through whose agency Dr. Bowditch had transmitted to him a copy of this work) observes, "The numerous additions which accompany the text, and which, in their turn, deserve to be translated into French, are the more important, as they clear away the difficulties which the subject frequently presents, and moreover include whatever Dr. Bowditch and other geometers have added to the theory of the motions of the heavenly bodies."

A third object of the translator was one which, though wholly subordinate to the others, he still thought of considerable

importance. La Place had so modified, by the action of his own mind, the various productions of other men of genius, that, while he stated the results of their labors, or adopted their improvements, he did not remember, or at least did not think it necessary to admit, the source to which he was, in each particular instance, indebted. His work told the great truths of science, but omitted to state by whom those truths had been first discovered and announced. But it must be remembered that it was concise in all its processes and expressions; and he probably felt that every reader, whose genius could follow him into the depth of his abstruse speculations, must necessarily have previously read the same works from which he had himself derived assistance; and that, familiar as they must be to the reader already, it would be superfluous, by any acknowledgment or quotation, to direct attention to them. Be this as it may, the fact is certain that, in the original work, credit is frequently not given to the eminent mathematicians of ancient and modern times, by whose labors those of its author were rendered less difficult or more effective. But Dr. Bowditch thought it due to the cause of literary justice, that, in every such instance, the omission in the original work should be supplied. Several of the communications which he received, mention his course in this respect with high approbation, and express the regret of the writers that La Place should himself have thought and acted otherwise. Dr. Bowditch was well aware of that natural self-love, by which every one is gratified at finding his labors approved by others; and he could especially realize how great must have been the pleasure felt at being quoted by La Place for some important process or discovery which had contributed to the completeness of the *Mécanique Céleste*. He had communicated to the public, and

to La Place himself, a notice of an error in the original work, which was corrected in a subsequent edition, but without even a private acknowledgment. That it was not *publicly* noticed by the author, was of course, for the reason above stated, no cause of any especial complaint. And Dr. Bowditch well knew by personal experience, upon more than one occasion, that it was very possible his own letter to La Place, or La Place's reply, might have miscarried.* It has also been suggested, that La Place was extremely averse to the act of writing a letter at any time, however strong or urgent a motive existed for so doing. This was certainly the case with Dr. Bowditch. Often, upon the receipt of an epistle or note, he has taken his hat, called personally upon the writer, and given him a verbal answer.†

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* Eight copies of the first volume of this Translation and Commentary, sent by him as presents to the most distinguished institutions and astronomers of Germany, wholly failed to reach their place of destination; and several copies of the first volume of Struve's Observations, transmitted by the author as presents from the Imperial Observatory at Dorpat in Russia to the Royal Society of London, in 1821, found their way, with the original letter which accompanied them, to a bookstore in Boston, in 1824, where Dr. Bowditch accidentally saw and purchased them; retaining one of which for his own use, he transmitted all the others as at first directed. He received no reply whatever, and presumed that the same evil destiny had again followed them. But some years afterwards, he found in Schumacher's *Astronomische Nachrichten*, Vol. IV. p. 398, a letter to the editor, from Francis Baily, Esq., of London, dated January 19, 1826, giving an account of their curious wanderings; of the agency of "Mr. Bowditch, the celebrated American astronomer," in the matter; and of their safe arrival at last, "after a long and circuitous voyage of five years, from Dorpat to Boston, and from Boston to London.

† When his third son went to Europe to pursue his medical studies, he gave him no letters of introduction, but, as a substitute for them, certain copies of a newly-published volume of this work to deliver as presents.

We should much regret that any of the preceding remarks should be construed as in the least degree attributing to La Place an intentional or unfair appropriation to himself of the fruits of the labor of others. We allude only to an error of judgment, which, though easily accounted for upon the above suppositions, is much to be regretted, as having occasionally exposed him to this more serious imputation. Any such omission of the author, as far as Dr. Bowditch was himself concerned, was, long before his decease, wholly effaced from his memory by the kindness shown to one of his sons by the widow of La Place, who transmitted, by his hands, as a present to his father, a bust of her late husband, which has ever since been one of the ornaments of his library, and which, by a provision of his will, is eventually to be deposited, with the manuscript of this work, in the Library of Harvard College, there to remain an interesting joint memorial of the author and the commentator.

Such were the three chief objects which it was the design of this Commentary to accomplish; and the general merits of the work have been acknowledged, in language no less strong than that already quoted, by Professor Airy, Francis Baily, Esq., the late Bishop of Cloyne, and other astronomers of Great Britain, as well as by those of France, Germany, and Italy. Thus, Sir John Herschel, in a letter to the translator, dated March 8, 1830, says, "It is very gratifying to me to commence a scientific intercourse, which I have long desired, with the congratulations which the accomplishment of so great a work naturally calls for; and I trust that its reception by the public will be such (of which, indeed, there can be little doubt) as to encourage you to proceed to the

publication of the succeeding volumes, and that you will be favored with health, strength, and leisure, to enable you to complete the whole of this gigantic task in the masterly manner in which you have commenced it. It is a work, indeed, of which your nation may well be proud, as demonstrating that the spirit of energy and enterprise which forms the distinguishing feature of its character, is carried into the regions of science; and every expectation of future success may be justified from such beginnings." — There was also one delicate attention which he received from a female hand. Mrs. Somerville sent a copy of her translation of a part of this work to him who was so happily and successfully engaged in the same labors. This volume, invested by him in a rich and beautiful binding, still attests the pleasure which he derived from it as a tribute of respect to his genius from one of the most gifted women of the age. — M. Lacroix, in a letter of April 5, 1830, writes, "Besides doing honor to the able, patient, and conscientious geometer, who has undertaken this great labor, your work, by the beauty of its typographical execution, does honor to the country where it is published. It is perhaps the most beautiful book which has appeared upon mathematics. The calculations in it possess the greatest neatness; and the figures which you have inserted in the body of the work itself unite the greatest elegance with convenience. An undertaking so remarkable entitles you to the gratitude of those who are desirous of studying to the bottom the theory of the system of the world, which rests upon transcendental mechanics; and it makes us wish for the speedy publication of the remaining volumes." — So also Mr. Encke of Berlin, in a letter dated May 5, 1836, speaks of it as a work "which, by the depth

of the researches with which it is accompanied, will insure to you a distinguished place among the astronomers who have employed themselves on the difficult branch of physical astronomy." — Mr. Cacciatore, conductor of the Royal Observatory at Palermo, in a letter dated May 1, 1836, mentions it as having "excited the enthusiasm of all who took an interest in the subject of it;" and in his treatise on Goniometry he remarks, "The profoundness and clearness which are conspicuous in that work, demonstrate that it was only by the aid of such powers of analysis that a commentary could be written upon the immortal work of La Place, and that La Place cannot be read with advantage unless it is accompanied with the notes of Bowditch. Italy must have a translation of it." *

The translation of this work was, as has been stated, completed as early as 1817; but so limited was Dr. Bowditch's income, that it hardly sufficed to meet the expenses of a growing family, upon all of whom he was desirous to confer the advantages of the best education which the country afforded; and all that was not needed for this purpose was expended in collecting around him the choicest scientific works of ancient and modern times. The American Academy, with that kindness and liberality which ever marked their intercourse with their late President, and which have characterized their proceedings since his decease, offered to publish the work at their own expense. He was also solicited to publish it by subscription. But his natural and praiseworthy independence of spirit induced him unhesitatingly to decline these gratifying

* See Notes to Mr. Pickering's Eulogy, pp. 96—100

proposals. He was aware, from the character of the work, that it would find but few readers, and he did not wish any one to feel compelled, or to be induced to subscribe for it, lest he should have it in his power to say, "I patronized Mr. Bowditch by buying his book, which I cannot read." He was thus obliged to wait even longer than the time prescribed by the poet, "nonumque prematur in annum," — until, under more favorable circumstances, he was enabled to commence the publication at his own expense.

But, though this work was not yet published, his fame as a mathematician had become fully established, and several of the scientific institutions of this country and of Europe conferred upon him their highest honors. The following are the foreign societies of which he was admitted a member, and the date of the several diplomas: — The Edinburgh Royal Society, January 26, 1818; the Royal Society of London, March 12, 1818; Royal Irish Academy, March 16, 1819; Royal Astronomical Society of London, April 13, 1832; Royal Academy of Palermo, March 12, 1835; British Association, June 29, 1835; Royal Academy of Berlin, March, 1836. It is worthy of remark, that France, the labors of whose greatest author have been by him rendered of so much more practical value and extensive usefulness, should alone have withheld from him the like honors.* In this country, he was elected a member of the American Philosophical Society held at Philadelphia, April 21, 1809; of the Connecticut Academy of Arts and Sciences, October 26, 1813; and of the Literary and

* It is indeed mentioned in Mr. Pickering's Eulogy, p. 101, that, but for his death, he would probably soon have been elected a member of the Royal Institute of France.

Philosophical Society of New York, January 17, 1815; &c. &c.; and at the annual commencement in 1816, he received from Harvard College the honorary degree of Doctor of Laws.

Dr. Bowditch always felt a deep interest in the various literary, scientific, and charitable institutions of his native town. It was chiefly through his instrumentality that, in 1810, a union was effected between the Philosophical Library, before referred to, and the Social Library, so called, which was the origin of the Salem Athenæum; and from that period, during his whole residence in Salem, he continued to be one of its most active and influential trustees. Having felt, in early life, the importance of a ready access to books, he labored to promote a most free and extensive circulation through the community, of the works in this institution, and to make its advantages as easy of attainment as possible, by every deserving individual. The gratitude inspired in his breast by the recollection of his own obligations of this nature, when he was but a poor apprentice, ended only with his life. Recurring to this subject in his will, he says, "These inestimable advantages have made me deeply a debtor to the Salem Athenæum;" and in return he bequeathed to it the sum of one thousand dollars. In accepting this bequest, the trustees admit most fully that "the early benefits which he thus gratefully remembered in his will," he had before repaid by his services and donations; and they add that they "see in this last act the unconscious and disinterested devotedness with which he, through a life of activity and business, fostered all the interests of learning and education."

Equally strong and lasting was his gratitude towards another

excellent institution, the Salem Marine Society. Composed exclusively, as its name denotes, of such as had made the sea the scene of their enterprising labors, Dr. Bowditch and his father had been both successively enrolled among its members. The kind and timely aid, to which, during several years of his infancy and childhood, he had been indebted for some of the absolute necessaries of life, he mentioned with emotion to his children, during his last illness, and deemed that he but paid a debt to this institution when he bequeathed to it a like sum of one thousand dollars, in aid of its charitable objects and purposes. His associates in this society were peculiarly competent judges of the value of his labors and services; and we doubt if our language could be made to present a more simple and beautiful expression of gratitude and regard than is imbodied in the following extracts from resolutions adopted by them upon the occasion of his decease: —"In his death a public, a national, a human benefactor has departed. Not this community, nor our country only, but the whole world, has reason to do honor to his memory. When the voice of Eulogy shall be still, when the tear of Sorrow shall cease to flow, no monument will be needed to keep alive his memory among men; but as long as ships shall sail, the needle point to the north, and the stars go through their wonted courses in the heavens, the name of Dr. Bowditch will be revered as of one who helped his fellow-men in a time of need, who was and is a guide to them over the pathless ocean, and of one who forwarded the great interests of mankind."

Each stranger who visits the hospitable city of Salem, is desirous to see the Museum of the Salem East India Marine

Society, or, as it is familiarly called, the Salem Museum. It is readily and gratuitously opened to his inspection. As he enters its spacious hall, his attention is arrested by a full length portrait of its late President. There the Commentator on the *Mécanique Céleste* seems still to preside in person over a favorite scene of his labors, inviting the attention of the visiter to what he has himself, in his will, described as "a museum of a very rare and peculiar character, collected from distant countries, and affording a proof alike of the enterprise, taste, and liberality of such of the citizens of Salem as have followed a seafaring life." The members of this society are such only as have sailed, in the capacity of masters or supercargoes, beyond the Cape of Good Hope or Cape Horn; and besides the obtaining of curiosities from these distant regions, an object of much greater practical importance, the collection of facts and observations in aid of nautical science, has always been zealously promoted by this society, and is believed to have been suggested by Dr. Bowditch himself. A blank book is furnished to each member, uniformly prepared for recording these facts and observations during each voyage; and, upon the return of the vessel, it is deposited with the society. It is then examined by a committee, who select and record in other volumes, having a convenient index for reference, all that they consider important; and the result is a mass of nautical information, such as, probably, exists nowhere else in the world, and which Dr. Bowditch found of great service in preparing for the press the various editions of the Practical Navigator. He was for many years Inspector of its Journals, before he became its President, and, in both of these relations to the society, highly promoted its progress and

success. Owning Salem for our birthplace, we feel proud of this institution; and we know that the bequest to it by its former President of the like sum of one thousand dollars, was made from an actual sense of obligations conferred, as in the case of the two other institutions which he thus remembered.

Besides these duties and engagements of a public nature, Dr. Bowditch became, in 1818, and was at his death, trustee for managing an estate of nearly half a million of dollars, which had been left by a merchant of Salem; and it may truly be said that there seemed to be no end to the various little services and good offices which he constantly delighted to render, and for which he was always sure to find the requisite leisure. His fondness for imparting as well as acquiring knowledge, was still manifested; as an instance of which it may be mentioned that he instructed several young ladies of Salem in French.

In his political opinions, he was a decided Federalist, and during the late war between this country and Great Britain, he took great interest in the absorbing and important events of the time. It has been stated that, when this war was first declared, he was, for two or three days, wholly unable to attend to his usual engagements of business or study. At the end of this time, however, he addressed his wife with "This will never do;" and, summoning a resolution to hope for the best, as the evil could not be avoided, he returned with alacrity to his ordinary course of life; and nothing more was ever heard from him about the war, except that he often expressed the ardent hope of obtaining a speedy and an honorable peace, and used all those

exertions which he thought the crisis required to accomplish so desirable an end.* It is believed that, later in life, and in view of its incidental and remote results, he regarded this war, if not as a necessary vindication of the national honor, at least as far less disastrous in its consequences than he had anticipated.

An instance may be mentioned of a fearless and independent discharge of duty, upon an occasion involving quite an exciting political topic. The legislature had passed a law in which a comma was inserted contrary, probably, to the true intention of the law-makers; but the mistake (if it were one) existed in the original draft, and in all the printed copies of the statute. Certain acts had been done by the Federalists, under authority of the law as actually promulgated, which their political opponents thought indictable offences, and which would have been so, if the comma had been transposed. A term of court was held in Salem, and Dr. Bowditch was returned upon the grand jury, and his associates elected him foreman. He had made himself thoroughly acquainted with this particular case, and had with him a legal opinion drawn up by one whose knowledge of law commanded universal respect. The prosecuting officer of the government attended before the jury, and, after stating that it was incumbent

* On one occasion, he was distributing votes at the ballot box, upon a very inclement day, by the side of a political opponent, whose efforts just counteracted his own. Each was troubled with a severe cold, and Dr. Bowditch proposed that they should both go home, as he was satisfied that their absence would leave the final result the same as if they both continued their labors. His opponent smiled, and objected to the proposition, that it would indicate a lukewarmness in a good cause. This reason immediately operated upon Dr. Bowditch to withdraw his proposition, and the equal struggle was resumed.

upon him to give them any legal information which might be needed in the course of their duties, added that complaints would be laid before them of violations of this statute, which he accordingly proceeded to explain. Dr. Bowditch said, "Sir, I doubt the accuracy of your explanation. Have you got the statute with you?" The legal adviser said he had, and produced it, and read it with a wrong emphasis, as if the comma were otherwise inserted. Dr. Bowditch indignantly interrupted him: "Please, sir, to show me the book:" and on looking at it, he added, "Why did you so read it as, by your emphasis, to give us a false impression of its meaning?" The reply was, "There is no doubt the comma is inserted where it now is, only by mistake." Dr. Bowditch said "It is your duty, sir, to tell us what the law *is* as you find it, not to tell how you think it ought to be improved or altered. We have no further occasion for your services at present; when we wish them, we will send for you." His associates on the jury, though nearly equally divided in political sentiments, were highly gratified by his characteristic promptness and energy, and refused to find any bills of indictment for the supposed violations of law, and unanimously passed a very full vote of thanks to him for the fairness and independence with which he had presided over their deliberations.

For the last twenty years of his life, he retired altogether from the exciting scenes of political strife to what he called his "peaceful mathematics;" though he still continued to entertain and express decided opinions upon public men and measures, and to act upon these convictions. Dr. Bowditch was never fond of public life. He never held a seat in the House of Representatives of his native

state, and was never a speaker in the assemblies of his fellow-citizens. He was, however, elected to the honorable office of one of the Executive Council of Massachusetts, which he held during the years 1815 and 1816, being, during one of those years, at the council board under the administration of Governor Strong, for whose dignified manners, commanding talents, and exalted character, he entertained the highest respect; and this sentiment, it is believed, was cordially reciprocated on the part of the chief magistrate. At this board, upon more than one trying occasion, he gave his vote and exerted his influence in support of the law, and refused to screen from its penalties the murderer and other criminals who had deliberately violated its provisions without any palliating circumstances; notwithstanding the strong and urgent appeals in their behalf, made by many excellent and benevolent citizens, among whom were some of his own personal friends. He considered that a capricious exercise of even the prerogative of mercy, would, in effect, convert a government of law into a government of men.

Dr. Bowditch's father had originally worshipped at the Episcopal church in Salem, but became a member of Dr. Bentley's society while his son was quite young. Upon his second marriage, Dr. Bowditch removed to a different part of the town, and, for this and other reasons, became a member of the society under the pastoral care of his friend Dr. Prince, and always continued so during his residence in Salem. Within the walls of its ancient church was the first simple rite of the Christian religion administered to all his children. A coolness on the part of Dr. Bentley, originating in this removal from his society, resulted,

from political causes during the war, in an entire estrangement, which was always a source of regret to Dr. Bowditch, who made the first advances toward a reconciliation, by a direct call at his house with a friend who desired an introduction. The visiters were received with the utmost cordiality, and the intercourse, thus happily renewed, was never afterwards interrupted; and the family still retain in their possession memorials both of the early and the late friendship of Dr. Bentley. It was indeed particularly delightful to Dr. Bowditch to find that the restoration of peace to the country, brought with it a renewal of that social intercourse which political dissensions had wholly interrupted. He often mentioned the visit of Mr. Monroe, the President of the United States, to the town of Salem, in 1817, as an occasion never to be forgotten, because it was the first upon which, after a separation of many years, were again brought together within the same circle so many of his earliest and most valued friends.

Many and very flattering and advantageous proposals were made to Dr. Bowditch, from time to time, to induce him to leave Salem; but his attachment to his native place proved stronger than any temptation to which he was thus exposed. In 1806, he was elected Hollis Professor of Mathematics in Harvard University.* In 1818, President Jefferson desired him to accept

* By a singular coincidence, it happened that, at the annual commencement of that year, he was seated between two strangers, one of whom, reaching forward, observed to the other the fact of his nomination to this office, and asked whether it would probably be accepted; to which the other replied, that he rather thought not, since Mr. Bowditch would probably be afraid of "singing small on classic ground." But with the *classics* of his own science Dr. Bowditch was sure that he was more conversant than any one there, and his ability to

the like professorship in his University at Charlottesville in Virginia; and in his letter containing this request he says, "We are satisfied we can get from no country a professor of higher qualifications than yourself for our mathematical department." In the same year, he was also urgently requested to take charge of an insurance office in Boston. In 1820, Mr. Calhoun, the Secretary of War of the United States, requested him to consent to a nomination to the vacant professorship of mathematics at West Point, and says, "I am anxious to avail myself of the first mathematical talents and acquirements to fill the vacancy."

In 1823, he received an invitation to take upon himself the charge of an institution in Boston, — similar to that which he then managed, — jointly with another, recently incorporated by the name of the Massachusetts Hospital Life Insurance Company, for which latter institution his services were considered almost indispensable. The salary offered at first was exactly three times that which he then enjoyed. After mature consultation with his friends, and after bestowing upon the proposal his own most careful deliberation, it was also decidedly declined. But those who made it would admit of no refusal. A new offer was forthwith made of a still more liberal compensation, ($5000;) and as he felt it to be more than an equivalent for any services which he could render, — and as any further refusal on his part, which should have led to the offer of a still higher salary, he would

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teach to others what he knew himself, he had often abundantly tested. But he declined the appointment, solely from an unwillingness to break away from all the pleasant associations connected with Salem.

have regarded as a mere extortion, — he felt that, in listening to the proposal, he was now obeying a call of duty, and he accordingly, though with great reluctance, determined to quit the town where, as he says in his will, "he had passed so pleasantly the first fifty years of his life." He could, indeed, hardly determine to make the sacrifice in question; and, even when it was determined upon, a vague hope and anticipation were long cherished both by himself and his wife, that eventually they should return and end their days amid the scenes of their childhood. Until his death he continued to take the same lively interest as ever in the affairs of that city.

He left his early home attended with as cordial and sincere expressions of respectful and affectionate regret as could possibly have honored his departure. A public dinner was given to him upon that occasion, which will long be remembered by those present as a scene of the most interesting character; while the recorded account of the festival will ever attest that it was a tribute paid to "science supported by genius, guided by benevolence, and attended by all the virtues;" — to their "distinguished citizen, the first of his countrymen in the walks of science, and second to no man on earth for purity and honor;" — to "their respected guest, who reflected upon his country the brightest honors of science, and diffused in social life the warmest influences of benevolence." And the wish was expressed, that he might "enjoy a happiness as pure as his fame, and constant as the activity of his virtues;" and it was declared that, "as the monarchy of France had done homage to her La Place, so would the republic of America not be ungrateful to her Bowditch."

It may here be mentioned, as an instance of Dr. Bowditch's diffidence and aversion to all public display, that he previously obtained from the president of the day a promise not to call upon him to address, however briefly, his assembled friends; — an incident which probably never before occurred upon a like occasion. It is also an interesting circumstance, that that gentleman (Hon. Benjamin Pickman) was the same individual to whom he was indirectly indebted in early life for his copy of Newton's Principia.*

This was the last occasion upon which Dr. Bowditch was personally to receive from his native city any public expression of those sentiments which continued, however, to be uniformly cherished and manifested towards him by its citizens to the close of his life. But honorable indeed to his memory were the proceedings of Salem consequent upon his decease, and gratefully will his children ever cherish the remembrance of them. The resolutions then adopted describe him to have been "a townsman of singular simplicity, integrity, purity, and benevolence of character; attaining from humble life, by his intellectual and moral energy, the highest honors of science, and the respect

* Dr. Bowditch had, many years before, been a member of an engine club in Salem, — a voluntary association of gentlemen for securing each other's property from the ravages of fire. At the occasional meetings of this club, of a social character, he stipulated that he should never be called upon for toasts or sentiments, unless he could be allowed to get them written and delivered by proxy. This was agreed to, and a friend, of "infinite humor," prepared accordingly a number of them, of a most appropriate character, which were from time to time produced, and highly applauded, and the more warmly from the above circumstance respecting their origin, which, though ostensibly concealed with suitable gravity, was yet known to all the members.

and gratitude of the community as a public benefactor;" and "earnestly commend to the admiration and imitation of all, and especially of the young men of his native place, the noble example of active and patient industry, unconquerable perseverance, unbending uprightness and faithfulness in all the relations of life, and ardent love and constant pursuit of knowledge and truth, which were the foundations of a character of such honorable distinction and rare usefulness;" and declare that "the people of Salem have ever retained a deep interest in his happiness and fame since he reluctantly left his native place for a sphere of more extended usefulness;" and that they "now receive and acknowledge with grateful sensibility the evidence of his generous remembrance of his first home in the last days of his life, contained in his liberal bequests to three of the most useful and important institutions of the city."*

Thus, in 1823, Dr. Bowditch removed to Boston, with his wife and a family of six children, — four sons and two daughters, — the eldest of whom had not completed his professional studies, and the youngest of whom was but an infant. The remains of one interesting child, who died in 1820, at the age of ten years, and those also of an infant boy, repose in the burial-grounds of Salem. All the anticipations and motives which

* Pursuant to another resolution, a public Eulogy was pronounced upon the deceased by Hon. Daniel Appleton White, which, listened to at the time with the deepest interest, will in its published form remain as true, beautiful, and discriminating a delineation of character, as might have been expected from one who himself possesses a high order of talent, who was long an intimate personal friend of the deceased, and whose thoughts are always clothed in a classic elegance of style.

determined Dr. Bowditch to this removal, were fully realized and justified by its ultimate results. In Boston he found many of his early friends, who had preceded him in this removal, and was in a few years followed by others. Strangers extended to him the hand of friendship, and gradually became endeared to him. He saw his three eldest sons engaged in the professions or pursuits which their tastes had led them to select, under circumstances more advantageous than his former place of residence would have afforded. His own increased income allowed him to enrich still more his valuable library; and he found himself surrounded by sources of the purest and highest enjoyments. In his will he speaks of Boston as "the home of his adoption, where as a stranger he met with welcome, and had continued to receive constantly increasing proofs of kindness and regard."

The affairs of the Commercial Insurance Company were successfully conducted by him till the increasing labor of his office as Actuary of the Life Insurance Company, induced the latter institution to offer him the same salary which had been previously paid by both together, and which was subsequently still further increased to six thousand dollars. He now relinquished the charge of the other corporation, whose charter was surrendered, and its concerns prosperously closed. And it was without any regret that Dr. Bowditch bade farewell to the cares and anxieties attendant upon marine insurance, where occasionally an unforeseen accident intervenes to destroy the fairest prospect of success. The company of which he was President had met with two losses, of thirty thousand dollars each, within one week; and though

one was a case of piracy, of which none lived to tell the tale, and the other a case of a tempest and shipwreck, and in each instance the vessels lost were of the first class, so that no error of judgment could be attributed to him, still the immediate influences of these disasters were disheartening; and he felt that, with the multitude, success, and that alone, is wisdom, and that, in the majority of cases, their verdict is a just one. He himself, indeed, always was of opinion that continued ill-luck indicated incapacity. On one occasion, when he had refused to underwrite upon a vessel commanded by Mr. A...., because "he was unlucky," the captain called upon him to complain of his imputing to him as a fault what was but a misfortune; and, after trying for some time to evade a direct reply, Dr. Bowditch at last said, "If you do not know that, when you got your vessel on shore on Cape Cod, in a moon-light night, with a fair wind, you forfeited your reputation as an intelligent and careful ship-master, I must now tell you so; and THIS IS WHAT I MEAN BY BEING UNLUCKY."

It was with pleasure, therefore, that he now turned his undivided attention to the management of the institution which was truly "the child of his affections." The act incorporating this company with a capital of a half a million of dollars, conferred powers of effecting insurance upon lives and granting annuities; and Dr. Bowditch, before he had even removed to Boston with his family, expressed so decidedly the opinion that the business would not be a source of profit with these limited powers, that, at his suggestion, an additional act was obtained, recognizing the right of the company to take money in trust to manage for individuals. His judgment proved perfectly correct upon both

points: while the former branch of business has been very trifling in its results, the amount of property already received in trust exceeds five millions of dollars, and the charge deducted for its management is the chief, almost the only, source of the profits of the company. He calculated interest tables, for the common year and leap year, specially designed for the use of this corporation, involving a great amount of labor; and a few copies were privately printed. These tables have saved the constant employment of at least one clerk. The continually increasing degree of public confidence and general popularity which this institution has enjoyed, has been chiefly attributable to the financial skill, sound judgment, strict integrity, and watchful vigilance, with which he devoted himself to its administration, and the fearless and decided manner in which he always checked, prevented, and guarded against, every possible abuse. He considered the institution as being morally the guardian of the property intrusted to it belonging to widows, minors, and others, and was careful that they should fully understand the contracts made by them, or on their behalf, and that those contracts, when made, should be observed strictly according to their true intent and meaning. Displaying the utmost courtesy, and the most liberal spirit of accommodation towards other institutions and individuals who dealt with the company, he had always in view, in its widest sense, the permanent and ultimate good of the institution over which he presided, and never compromised its interests or rights. Disarming all jealousy upon the part of the legislature, by the open and frank communications which he made to its committees, he gradually overcame much of that prejudice which a republican form of government naturally tends to foster

against all large moneyed institutions. Identified almost with himself, the public, no less than the stockholders and depositors, reposed in it a degree of trust, which has probably never been exceeded by the most extensive and well-earned popularity of any similar institution. In the settlement of estates of deceased persons in the Probate Office for the county, the records often speak of it as "the Bowditch Office."

Hardly a day passed which did not exhibit in full view all his most peculiar and methodical habits of business, and many of the most valuable and important of the distinguishing traits of his character. Instances without number might be cited. One of the wealthiest citizens of Boston, himself a member of the Board of Control of the company, wished, upon a Saturday, to deposit ten thousand dollars to be managed in trust. His balance in the bank, however, was less than that sum by three hundred dollars, and he offered to the actuary his check for that part, to be good on the next Monday. Dr. Bowditch said, "I cannot, sir, receive any check payable at a future day as cash. It is a rule of the office, which you yourself assisted in making, that I shall never part with the money of the institution, or make any engagement in its name, without an actual payment, or sufficient collateral security received in return. It is my duty to enforce this rule against the most powerful and influential, as well as the most humble, individual who deals with the institution." The gentleman was at first not a little astonished at such a novelty as the refusal to trust him for three hundred dollars for one day. Dr. Bowditch resumed, — "I am happy, sir, that it has become necessary to enforce this rule in an extreme

case. Having been once applied to yourself, no one else can ever object to a compliance with it. And it is in itself an excellent regulation." A moment afterwards, finding that his own private balance in the bank was more than that sum, he offered to take the gentleman's check himself, giving to the company his own check payable that day; which was done accordingly.

Upon another occasion, a person called to take away a policy for which he had contracted. Dr. Bowditch asked him the time of making it and the amount; then turned in a moment to two books in succession, went into the vault in which was contained the property of the company, and looking over a small file of papers in one corner, came out again, and said, "You have got it, sir." — "No, sir, I have not." — "I am certain you have." — "Nothing but your being so certain that I have, makes me doubt at all that I have not got it." — "I am ready to take my oath in court, if necessary, that it has been delivered to you." — "O, then, you remember, I suppose, placing it in my hands." — "No, sir, I have no particular recollection about the matter at all. But when a policy is once recorded in *that* book (pointing to a volume before him,) and has received the examination both of myself and the secretary, the original policy is always put by me in that corner of the safe. It is the rule of this office, that nobody shall deliver out an original paper but myself. I have the key of that safe; your paper is not there. *Therefore*, if I were called upon in court, I could take my oath that you have received it." The lost paper was of course found.

A female had deposited with the office all her property, in

strict trust for her own life, the sum being sufficient to secure her an income of about six dollars a week. She subsequently became insane, and a guardian was appointed, who took her into his own family to reside. He complained every year that the income was not enough to pay the necessary expenses of taking care of her, and said that he must have part of the principal. Dr. Bowditch told him it was impossible; that the company never would consent to any violation or modification of the original contract which the lady had made when in possession of her reason; and added, "You can have her placed in any private institution for the insane, at a much less weekly expense than you yourself charge." Finally, one day, when he called for the annual income which was payable, he refused to receive it unless he could obtain also part of the principal; and added that if the company would not pay it voluntarily, he should commence a suit to compel them to do so. Dr. Bowditch, fired with indignation, said, "The moment a writ is served upon the company for such an object, I will institute a complaint against you as an unfaithful guardian, and get you removed from your trust." From this time, the income was amply sufficient to meet all the wishes of the guardian.

A gentleman wished to obtain a loan upon mortgage. On examination, it appeared that the former owner of the estate had, *before his purchase of it*, devised all his property, of every kind, to the lady he was about to marry, and, several years afterwards, died without children, leaving her his widow; and that she had conveyed the estate in question to the applicant, with warranty. Notwithstanding the clear intent of the testator, this particular

estate legally belonged not to his widow, but to his brothers and sisters as his heirs at law. The loan must therefore be declined. But the equity of the case was so strong, that, upon the applicant's giving such further security as was required, in addition to that afforded by the improvements which he had made upon the estate, the loan was at last agreed to; and the secret of the defect of title thus discovered, was long preserved inviolate. It happened, by a singular coincidence, that the widow had died, and that her property, including the proceeds of this very estate, had been placed with the company in trust for a daughter, who, with a large family, was dependent upon the income which it afforded. The gentleman, ascertaining this fact, and being impatient of waiting for the expiration of about a year, when his title to the land would be rendered perfect by the statute of limitations, actually disclosed the defect to those legally entitled to the estate, feeling sure that, if they recovered it from him, he should be able to obtain his indemnity from the property thus placed in trust with the company. The heirs at law, as soon as they became apprized of their rights, brought a suit to enforce the legal claim, which had originated about thirty-nine years before. When Dr. Bowditch learned these circumstances, and found that the person in question, rather than wait silently a few months longer, had been willing to give effect to this unjust claim, and thus indirectly to deprive of her last resource this female and her family, he said to him, "You have involved yourself in one suit, and must lose it; and never will I voluntarily part with one dollar of the widow's money intrusted to me, to make good a loss which you have thus brought upon yourself.

You shall first have still another suit, against all the weight and influence which this company can command." The gentleman died during the pendency of the original suit, by which event the action was ended; and the period of limitation having been previously completed, a new suit could not be instituted. Nothing but the loss of life could have prevented his losing the cause.

A gentleman called to deposit a small sum of money in behalf of a young lady, his ward, to remain till she was of age. It was readily received. Before he retired, another gentleman entered, who happened to be a very particular friend of the actuary. He said, "Will you receive twenty or thirty thousand dollars in trust for me?" — "No, I cannot receive it from you." — "Why not from me, as well as any one else?" — "Because you can take care of the money yourself. Whenever, as at present is the case, there is so much money in possession of the company, uninvested, that it will not be a decided advantage for them to take any more, I receive it only from such as cannot take care of it themselves. For such cases especially was the company designed. It is a sort of Savings' Bank, except that it is on a larger scale than usual."

He also considered it very important that no money should be received in trust from foreigners or residents out of New England; both as a means of preventing ill-will of any kind, and that the whole affairs of the company might be more strictly local, and therefore more safe, than they could be if its dealings were more widely extended. And thus it once happened, in a severe financial crisis, when it would, in his own opinion, have

been advantageous to the community, in the particular case, to have dispensed with the rule, that he yet looked to ultimate consequences, and refused a deposit of one or more hundred thousand dollars, which a resident in Nova Scotia wished to place with the institution.

His intercourse with the three individuals associated as immediate officers of the institution under him, was uniformly of the most affectionate character. Requiring at all times great promptness and accuracy from them in the discharge of their appropriate duties, his kindness of heart won from them all, the same attachment which they would have felt towards a parent. These officers will never forget that he summoned them as witnesses to his will, telling them that before he died he wished to see them once more together, adding, "This is, probably, the last time that I shall have that pleasure." It was the last time. One of them (the secretary) had been his colleague from the foundation of the office; and there had existed between them a daily intercourse of the most friendly character, without the slightest interruption, during fifteen years. To him Dr. Bowditch expressed, on his death-bed, the earnest wish that he would in no event desert the institution. Having been addressed by the deceased as a son, he, as such, was one of the four individuals who, besides ourselves, attended his remains to the tomb. He will, we know, pardon the relation of the following anecdote: — Dr. Bowditch had one day gone out of the office for a few moments, and, on his return, found that he had accidentally left open the trunk containing all the convertible property of the company. The secretary might have had access to it. Without any

remark at the time, he took out the trunk, and the schedule of the property which ought to have been there, and carefully examined each item. He told us at the time, and the secretary of the company himself afterwards, that, though he would have unhesitatingly left his own property uncounted, and have felt that there was not the slightest risk from the exposure, he could not answer it to his conscience, as the responsible guardian of the property of others, knowingly to subject it even to a possibility of loss.

An instance may be mentioned of his exact and equal justice, where a member of his own household was made its subject. Several years ago, it was the duty of the individual then the messenger of the office, to receive the interest paid upon notes and mortgages, and hand it immediately to the actuary, that the proper endorsements might be made; and if, after business hours, persons called to make such payments, and were willing to leave the money with the messenger, taking his word that the proper endorsements should be made the next day, this officer was in the habit of accommodating them by so receiving it. Yielding to temptation, he spent a small sum thus received, ($120,) intending to replace it by his salary, which would be due in a few days. Dr. Bowditch's eldest son, who then was, and still is, solicitor of the company, was called upon to write certain letters to persons supposed to be delinquent in payment of interest. When he was preparing to do so, the messenger of the company called, and with many tears confessed his wrongful appropriation of the money, and begged that, at least for the sake of his wife and children, it might be concealed till the next day, when he had

always intended to replace the sum; adding the most solemn assurances that it should then certainly be done. The son consented, though reluctantly, to conceal from the father an act which he was induced to believe had been committed without any deliberate intent to defraud. On the next morning, the salary was paid, and almost immediately afterwards, instead of the promised application of it, was paid over by the messenger to an urgent creditor, who threatened him with the utmost severity of the law. Upon ascertaining this fact, the original offence was without delay disclosed by the solicitor of the company to its actuary. Dr. Bowditch's reply was, "Had it been your own money, you would have been at liberty to listen to the dictates of compassion and humanity; but as an officer of this institution, you have committed, though unintentionally, a great fault, which I can with difficulty overlook. You must give me your own check for the whole amount of the deficit, since by a timely exposure the company could have withheld the salary which has just been paid. This being done, all further action I leave to the directors." The check was then given; and this important though painful lesson of duty was cheerfully learned at the time, and has been as gratefully remembered since as the most kind and affectionate instructions which a parent's love ever communicated. Before this incident, and, if possible, still more scrupulously since that time, Dr. Bowditch determined that no one should remain in any situation attached to the office, who was laboring under pecuniary embarrassments. To see the note of one of its officers offered upon change, would with him, at any time, have been a conclusive reason for his instant dismissal. He knew intimately the weakness of human nature; that

honesty and integrity may in a moment be lost by those fatal entanglements; and he regarded the prayer for delivery from temptation as one of vital importance. In his own conduct, he practised upon the same rule. He never endorsed or became surety for any of his children, or made any engagements by which he might become liable to forfeit his independence.

In adopting the forms for various blanks, and the books for the various accounts of the company, Dr. Bowditch introduced, at the first establishment of the institution, such perfect simplicity of method and arrangement, that scarce any subsequent change has been found from experience to be necessary; the books having different columns ruled, and the matters stated in print at the top of each, which are to be recorded in it, so that a glance suffices to decide what would otherwise require perhaps a long search. Dr. Bowditch was very rapid and exact in all his calculations, such as computing interest, &c., and each one's business was in succession finished with the utmost despatch, so that it was wonderful how much he was able to accomplish. He always bestowed his own final revision upon every contract made by the company, and every note or mortgage or other security made to or taken by it;* and frequently his minute and careful scrutiny

* When a mortgage is paid off, the law makes it the duty of the lender to go to the public office where the same is recorded, and to acknowledge satisfaction in the margin of the record; for making which entry the officer is entitled to a small fee, which is payable by the borrower. Dr. Bowditch, on such occasions, always took this fee, and, wrapping round it a piece of paper, on which were minuted such particulars of the mortgage as would identify it, and prevent him from discharging the wrong one, "This money," said he, "will answer as ballast for the paper, and prevent that from getting out of my pocket, and the affair out of my memory."

would detect some clerical error, which had escaped all who had preceded him. He was equally exact and particular in his mode of transacting all the other business of the company. Every day, at two o'clock, he balanced the cash account before he closed the office, that he might leave nothing unfinished. Only the day before his death, having a week previously found himself too feeble to make an endorsement upon a promissory note of half the principal, and to look over and execute a deed of release of half the mortgaged premises, he sent to the secretary to bring him the papers again, saying, "You know I never like to leave any thing unfinished." He made the endorsement, and executed the release in question only forty-seven hours before he died. He would never listen to two speakers, or attempt to attend to two matters at once. "One thing at a time," was his rule. It brought order out of chaos; all the elements of confusion vanished at its magic influence. It was certainly the most efficient, and probably the only rule, that could have been devised for finishing all the various and complicated transactions which each successive day brought with it. Often, when engaged in making an entry, if, upon looking up, he saw a friend, he would exclaim, "In one moment!" and then proceed and deliberately finish the matter before him; after which he would say, "Now I am free, and will talk with you." He had his La Place habitually by his side, and in the occasional intervals of leisure from the calls of business or friendship, he constantly recurred with delight to the teachings of this his favorite author.

Dr. Bowditch enjoyed most heartily any laughable incident which occurred, and often, by his amusing comments or anecdotes,

awakened a like hilarity in others. Thus, upon one occasion, a person who called to buy a life annuity moved so feebly, and made so many grimaces and contortions, and groaned so dolefully, lamenting his ill health, and the short time he had to live, that it was very evident he was acting a part, with a view to make as good a bargain as possible. Dr. Bowditch enjoyed the affair highly, and, after the applicant had retired, he was describing the incident to a friend with so much comic effect, "suiting the action to the word, and the word to the action," that he even surpassed his original; and the two officers of an insurance company in the room immediately beneath his own, came running up stairs with some anxiety to know the cause of such sounds of distress and such piteous ejaculations.

It was indeed wonderful with what facility Dr. Bowditch could in an instant divert his attention from any subject to another of the most opposite character; at one moment engaged in the every-day detail of the business of his office, at the next abstracted from all around him by the most elevated investigations of science; and then, again, displaying either the utmost cordiality of friendship, or almost the wild hilarity of childhood, and apparently finding from each change an equal degree of relaxation.

Dr. Bowditch's disposition to afford every possible facility and accommodation to annuitants, depositors, and stockholders, was manifested upon all occasions. He habitually kept the office open during the afternoon of the day preceding that for the general payment of interest or dividends, of which he sent a private notice to those individuals who had the largest number

of different sums to receive, stating his readiness then to pay them; which arrangement saved both them and all others who might have applied at the same time with them on the following day, from the disagreeable but unavoidable delay to which they must then have been subjected. This not only gratified the individuals in question, but was indeed, indirectly, an equal accommodation to every one else, besides that it insured greater accuracy than if the entries were made in a hurry, with many standing around waiting impatiently for their own turn.

He was also desirous that females who had annuities or deposits in trust, should come in person to the office to receive their payments, as he wished them to see and judge for themselves as to the management of their property, and that he might himself give them any explanations and information which they desired; and the moment a lady entered, she took immediate precedence of every one else, and the claims of some of the most considerable depositors have often been thus postponed to those of a poor widow who had intrusted to the institution her little all. No female annuitant, indeed, ever left the presence of Dr. Bowditch without having been delighted with his courteous and polite reception, and with the ready, frank, and kind manner in which her inquiries had been answered or her wishes attended to. The courtesy thus shown to female annuitants was extended to females applying for loans upon mortgage — but in rather a peculiar way, viz. *the uniform refusal of their request.* And it was certainly with some ingenuity that this rule of the company was supported exclusively by reasons based upon gallantry towards the sex. He said to them, "It is impossible to accede to your

request, because, should any delinquency occur, the company could never be so rude or harsh as to institute a suit against a woman, or to take forcible possession of her estate. Therefore we never lend except to a *man*, with whom we can immediately resort to all the strict measures of the law, in case it becomes necessary." So plausible a reason was always satisfactory.

Prompted by a similar motive of politeness was another of his private rules. Aware of a difficulty which he through life experienced in remembering names, and that the self-love of applicants at the office would be hurt at the necessity of informing him who they were, he was in the habit of referring every one whose familiar features thus perplexed him, to another officer of the institution, to get the number of the policy or mortgage respecting which question had been made. The clerk understood this request, and began by asking *the name*, which was a less mortifying question from him, than it would have been from the principal of the office. He then handed the name and number to the actuary on paper.

The most difficult duty to be performed by the actuary of this company, and at the same time one of almost daily recurrence, was that of refusing applications for loans of money which he thought it not safe for the institution to grant. It often required great firmness and decision. Powerful influences, direct and indirect, were often resorted to in order to obtain a favorable answer. But it is emphatically true that Dr. Bowditch understood the art of saying "No;" and while he decidedly and peremptorily declined an offer as inadmissible, so that no time should be wasted

in profitless discussion, it was always his endeavor to do it with as much courtesy of manner as possible. He was well aware, however, that this was the most thankless part of the actuary's duties; that though a manly, independent, and decided course, would certainly secure the respect and approbation of the majority, and promote the interests of the institution, it must also necessarily give offence in individual cases. Such cases did occur. There never lived the man whom Dr. Bowditch feared to address in what he considered the language of truth, and he often spoke with a plainness and directness to which his hearers had not been accustomed.

It was always a painful duty, however, to be compelled to disappoint applicants by the refusal of their requests, though it was one which, as has been stated, Dr. Bowditch never hesitated to perform. Sometimes, indeed, he declined requests, which he subsequently thought might, with some slight modification, have been admissible; and in such cases he was always ready and willing to recede from his first position. An instance of this kind occurred a few weeks before his death. The proposal made by a friend was declined, as not coming within the rules of the office. The applicant had no idea that Dr. Bowditch at that time was laboring under a serious disease, and manifested some surprise and irritation at this unfavorable answer. With a slight change in the terms of the proposal, by which the original objection was removed, it was, in a day or two afterwards, acceded to. It was soon known that Dr. Bowditch was alarmingly ill. No one was more earnest and constant in his inquiries respecting his health, than the gentleman alluded to. The day but one before

his death, Dr. Bowditch made some remarks to his eldest son, desiring him to communicate them in his name to that gentleman. A letter was accordingly written, in which, after stating his uniform sentiments of esteem and respect during a long intercourse, and alluding to a common descent from the same remote ancestor, (John Turner,) as having strengthened by relationship the feelings of good-will which a knowledge of character had first produced, — Dr. Bowditch proceeds to say that if any incident has ever occurred between them of a less friendly description, he has never let the sun go down upon his remembrance of it, and hopes that it has been equally forgotten by his friend. A reply was received, in which the writer says, "I have ever been inclined to reverence the silver hairs of an honest man. Associated with the consideration that they are connected with great public services, inflexible independence of thought and action, and a very high order of intelligence, duty, not less than inclination, commands our respect." A copy of the original communication, sent by his son, as he had desired, and the reply to it, were read to Dr. Bowditch only twenty-three hours before his death. They were the last to which he ever was a listener. He died, as it were, in the very act of forgetting and forgiving, and asking a like forgetfulness and forgiveness of, all the incidents connected with one occasion upon which he feared that, as actuary of the Life Insurance Company, he had perhaps unnecessarily said "No." *

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* Of a similar character is the anecdote of his once asking the pardon of some young men in the Salem Athenæum for having upon a certain occasion spoken, as he thought, somewhat too quickly to them. — *Judge White's Eulogy*, p. 57.

During the late disastrous period, when every bank in the United States was compelled to suspend specie payments, Dr. Bowditch conducted the affairs of the Company with such caution, that — though this was the largest moneyed institution in New England, having a capital equal to that of ten common banks, and though its dealings were necessarily extended throughout the community — the actual loss sustained by the reckless management of other institutions, and by the numerous bankruptcies which destroyed all commercial confidence, was less than that of any one bank in the city, and was more than balanced by the reserved profits resulting from the success of a financial measure which he had previously suggested and executed.

Such was Dr. Bowditch, the Actuary of the Massachusetts Hospital Life Insurance Company. He had qualifications rarely, if ever, found united in one individual, and they had here their happiest and fullest exercise, and accomplished a most useful result. Not inferior to his fame throughout the scientific world as the author of this work, will be the reputation which he has left among all connected with that institution, as one who, (in the language of the Board of Control in one of their resolutions adopted after his decease,) "by the clearness and simplicity of the regulations he devised and adopted, and the intelligence, fidelity, and inflexible resolution with which they were adhered to and executed, has preëminently contributed to the present stability and prosperity of the institution." In another of these resolutions they describe him as "one who lived long enough to perform all the duties of a long life, although not permitted to attain old age; who has left to his family a bright example,

and a name that will be known and honored throughout the world so long as virtue and science shall be held in reverence."

It is gratifying to us to reflect that the institution whose continued prosperity was almost the last earthly wish of Dr. Bowditch, has been intrusted to the hands of one whom, of all others, he would have himself selected to be his successor; under whose auspices we doubt not that it will long possess, as heretofore, the unlimited confidence of its friends and of the community.

Dr. Bowditch was, from 1826 to the end of 1833, a Trustee of the Boston Athenæum. At the time of his appointment, it was in a situation far from prosperous. One whose name has ever stood foremost upon the list of public benefactors in this city, generously offered to the institution eight thousand dollars, if a like sum in addition could be obtained. Dr. Bowditch, with the assistance of a friend equally zealous in the cause, undertook the task of procuring the performance of this condition. They first waited upon a nephew of the original donor, who, upon the circumstances being stated to him, immediately said, "I will follow the example of my uncle, and give the same sum, provided you can get from others sixteen thousand dollars." This brilliant success in the outset, in reality, as he perceived by the condition thus annexed, doubled his future labors. But he saw in it only an opportunity of urging more strongly upon others a like munificence, as the withholding of each small sum might endanger the loss of the whole promised bounty. His efforts, therefore, were unremitting. With that persuasive eloquence which is always inspired by disinterested zeal in a good cause, and which

few could resist from his lips, he appealed so forcibly to those he addressed, that he obtained much more than the requisite sum. One great object to which the funds thus gained for the institution were applied, was that of perfecting its collection of works of science; and here his labors were no less useful than they had been before. He had previously accomplished one measure, far more important in his view than any other, and without which he felt that any future labors would be of but little advantage, — namely, that of permitting subscribers to take books from the library for the use of themselves and their families. The benefit of a like arrangement he had long experienced while connected with the Athenæum in Salem. This was at first vehemently opposed by some of the most intelligent of his associates, who apprehended from this plan evil consequences, which have been proved by experience not to result from it. There can be no doubt, indeed, that the final attainment of this his favorite object has been of great benefit to the citizens of Boston.

These services were remembered so gratefully by this institution, that, on his decease, its trustees felt themselves called upon publicly to declare their nature and extent, in order that the community might duly appreciate its obligations to him. Death had removed the necessity of that silence which was more grateful to the modesty of the living, than would have been even that just and appropriate eulogy, which, after alluding to his particular services above mentioned, proceeds thus: — "But Dr. Bowditch has far higher claims to notice; he stood at the head of the scientific men of this country, and no man living has contributed more to his country's reputation.

His fame is of the most durable kind, resting on the union of the highest genius with the most practical talent, and the application of both to the good of his fellow-men. Every American ship crosses the ocean more safely for his labors, and the most eminent mathematicians of Europe have acknowledged him their equal in the highest walks of their science. His last great work ranks with the noblest productions of our age." — "But it is not merely the benefactor of this institution, and the illustrious mathematician, whose labors have given safety to commerce and reputation to his country, whom we lament. It is one whose whole life was directed to good ends; who combined the greatest energy with the kindest feelings; who was the friend of every good man and every good undertaking; the enemy of oppression, the patron of merit, the warm-hearted champion of truth and virtue. It is the companion, whose simple manners and amiable disposition put every one at ease in his presence, notwithstanding the respect which his genius inspired; and who could turn, apparently without effort, from the profoundest investigations, to take his part, with the light-heartedness of a child, in the mirth of the social circle. His heart was as tender as his intellect was powerful. His family found him as affectionate as he was wise; he was equally their delight and their pride. They could have no richer inheritance than his character; and nothing but such a character could afford them consolation for such a loss." And for this consolation they refer us, in their concluding resolution, to "the contemplation of a life so gloriously spent, and which has left such enduring monuments of excellence in every department, whether of science or of practical utility, to which it has been devoted."

A marble bust of Dr. Bowditch, executed some years since by John Frazee, of New York, was presented to this institution by the gentlemen at whose request it was taken. Though it accurately represents the features, the artist has not succeeded in arresting that bright and cheerful expression of the deceased, which his children will ever most delight to recall.

Under his auspices as President of the American Academy, one volume of its Transactions* has been published. He also procured an important modification of the terms upon which a donation had been made to that body by Count Rumford; so that, from being wholly worthless, it has been rendered available for the general objects of the society. He obtained the hall over the Life Insurance Company's office for the use of this institution, where its excellent collection of books was neatly and elegantly arranged under his direction. His youngest son, who had succeeded in making a fine catalogue of his own library, he had requested at his leisure hours to prepare one likewise for this; which labor has been nearly completed since his decease. An artist has, at the request of the Academy, recently executed a marble bust of their late president, in whose death they lament the loss of "their distinguished associate and head, whose name

* This is called Vol. I. of a New Series, to avoid the necessity of sending to foreign members of the Academy copies of all the earlier volumes; as he considered that Vol. I. of the Old Series contains some mathematical papers of so inferior a character, as to indicate a low state of that science in this country at the time of its publication. It may be observed that, by this arrangement, he was obliged also to consign to the like obscurity all his own communications, as they are recorded in the subsequent volumes of the Old Series.

has for many years conferred honor upon their institution, and whose communications are among the most valuable contents of the volumes of their Memoirs;" — "of a friend and fellow-citizen, whose services were of the highest value in the active walks of life, whose entire influence was given to the cause of good principles, whose life was a uniform exhibition of the loftiest virtues, and who, with a firmness and energy which nothing could shake or subdue, devoted himself to the most arduous and important duties, and made the profoundest researches of science subservient to the practical business of life." *

Dr. Bowditch was accustomed to say, after his appointment to a seat in the Corporation of Harvard College, that his two high holidays were those occasioned by the literary exercises and festivities of the annual Commencements of that institution. On these days he might always be seen listening with interest and attention to the various performances.

Though not himself a practical mechanic, there was no class in the community whom he more valued and respected. Many intelligent mechanics will remember the familiar and friendly manner in which Dr. Bowditch has often joined them when

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* The Eulogy pronounced, pursuant to another resolution of the Academy, by John Pickering, Esq., one of Dr. Bowditch's earliest and most intimate friends, has been before referred to. It presents to the reader, with the utmost fidelity and accuracy, and with great thoroughness of research, an analysis and estimate of the scientific labors and services of the deceased, to which we with pleasure acknowledge our own obligations in preparing the present memoir.

walking, and continued to walk with them arm in arm. Living in a republic, he respected in others, and aspired himself to no aristocracy, but that of character and talents — that which results from useful and honorable labors either of the hands or of the head. No sight ever afforded him such pleasure as that of the working classes of the city, upon one day in seven, dressed in their Sunday clothes, and forgetting the laborious occupations of the week, enjoying with their wives and children the pure air and beautiful scenery of the Boston Common.

The Boston Mechanics' Institution considered him justly entitled to the honor of being elected its President, even though his manual dexterity in any particular craft might be doubtful. He received this appointment January 12, 1827, and resigned the office April 27, 1829.* A valuable apparatus was purchased by subscription, which he promoted by his influence and example; and lectures upon the steam engine, and other similar important subjects, were delivered with much success. And it is believed that all the lectures now delivered so generally before various institutions in Boston, upon almost every evening in the week, and by which so much valuable information is diffused through the community, find almost their first precedent in this country in the course given by the mechanics of Boston, with Dr. Bowditch at their head.

By the same body of men Dr. Bowditch was placed on the select list of honorary members of the Massachusetts Charitable

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* He was chosen *first* honorary member of this society, May 15, 1829.

Mechanic Association, (February 4, 1828;) while those whom he through life had most benefited were proud to own him as one of their profession, and elected him a member of the Boston Marine Society, (March 2, 1830.) The latter society, upon his death, say, "'He hath wrought a good work, and rests from his labors.' His intuitive mind sought and amassed knowledge, to impart it to the world in more easy and comprehensive forms. His life and example, in all their phases, present more to admire and approve than we may hope to see imitated and achieved by another individual." Both these societies, receiving unitedly in his will the same affectionate and honorable mention, unitedly listened to the Discourse which the Rev. Alexander Young had previously delivered before his parishioners,* in the church where the deceased had worshipped.

Thus various and important were the public relations which Dr. Bowditch sustained in the community around him, and thus

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* The first in the series of the publications of this class in point of time, it details very fully the incidents of Dr. Bowditch's life, and especially those illustrating his personal and social habits and character. Some slight errors in this Discourse, chiefly respecting the time when, and the circumstances under which Dr. Bowditch gained particular acquirements, a subsequent investigation has enabled others to correct; but the substantial accuracy and fidelity of those *moral* delineations, which it was his peculiar province and design to present, will ever remain unimpeached. On the afternoon of the day when it was delivered in Boston, it was repeated at the church of the late Dr. Prince in Salem. Of its delivery upon this latter occasion, it is recorded that "in that compacted audience, there were several present who had witnessed the whole career of Dr. Bowditch, from earliest childhood to the lofty summit of his usefulness and fame; and among others, Captain Henry Prince, under whose command he had performed his four first voyages;" — and it is added that "it was a striking evidence of the sincere and deep sympathy of the audience in the commendations bestowed by the preacher upon the

uniform and unqualified is the testimony given respecting the value of his diversified labors and services. Beautifully has one of his eulogists* said, "The world has been the wiser and the happier that he has lived in it." And his death was announced in one of the public journals,† with but the following brief comment: "A star has fallen." Connected with so many different classes of society, he seemed, as he walked through the streets, constantly to meet an acquaintance or a friend. None were so high that they did not feel themselves honored by his notice, and none so humble as to be beneath it. The little child on its way to school was often arrested by some kind inquiry from one who had been prepossessed by its sweet or intelligent countenance, and detained by a dialogue which ended in a kiss, or some other act of endearment; and virtuous age ever received his reverence. The Chief Magistrate of the Commonwealth, with friendly sympathy, was present at those simple funeral rites by which we felt that the deceased would be most appropriately honored; and one in humble life, who was to us a stranger, asked permission to take a last look at his lifeless remains, "because he had known Dr. Bowditch and *loved* him."

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character and merits of the departed, that, after the discourse was finished, though large numbers of them had been standing for three hours, they continued in the church to listen to the dirge commencing with the unrivalled lines, —

'Unveil thy bosom, faithful tomb;
Take this new treasure to thy trust,
And give these sacred relics room
To slumber in thy silent dust.'"

* Mr. Young. † National Intelligencer, March 21, 1838.

But for his residence in Boston, Dr. Bowditch would never have possessed the means of publishing this work at his own expense; and notwithstanding all his daily duties and occasional labors above described, during his residence here, and the performance of multiplied good offices to individuals as before, and by which, in the aggregate, almost as much service was rendered to society as by his more public efforts, — he also found the leisure which he needed for this the last great undertaking of his life.* The estimated cost of publishing the five volumes exceeded twelve thousand dollars, and was equal to one third of all his property at that time. To this undertaking, involving so much expense and labor, he was strongly urged by his wife, who assured him of her willingness to make any sacrifice which

* The first volume was published in the year 1829, the second in 1832, and the third in 1834. These three volumes were from the press of Isaac R. Butts. The fourth volume, from page 684, has been stereotyped at the Boston Type and Stereotype Foundry. If Dr. Bowditch had lived, he would probably have stereotyped all the others. Connected with the publication of this work, may be mentioned two anecdotes exhibiting a trait of character in the translator which has been before alluded to. Robert W. Macnair, whose name is affixed to the second volume as a compositor, was one with whose accuracy, neatness, and assiduity, Dr. Bowditch was always much pleased; and he was gratified to find that he felt such a pride in the appearance of the volume, as the result, in part, of his own manual dexterity, that he wished the fact of his agency in preparing it to be thus always known. Dr. Bowditch, on learning his death, (which took place after a short illness, February 27, 1833,) expressed to his widow his sympathy for her loss, and, notwithstanding her husband had been employed and paid by another, gave her at parting the sum of fifty dollars, as an acknowledgment of the zeal and fidelity which had been shown in his service. And during his own last illness, he told his children that with the printers and publishers of this work he wished them "to deal liberally." And when, after his death, this circumstance was communicated to them, they said, "It is like him; he always acted so towards us while living."

it might render necessary.* She knew that, in the event of his death, he had made her his sole legatee. But, like himself, she valued money only as a means of attaining desirable ends. And to what more noble or worthy purpose could it possibly be applied? She did not live to see the publication completed, though she found the reward of her advice, in those high terms of commendation with which each successive volume was mentioned by the most eminent scientific men of the age, in this and in foreign countries, and in the constantly increasing fame and reputation which were thus gained by her husband. The letters of this description, already, in part, laid before the reader, the wife listened to as to the sweetest music, for they contained the praises of one dearer to her than herself. And so deep was Dr. Bowditch's conviction that, but for her disinterested advice and urgent solicitation, the publication would never have been commenced, that he prepared a dedication of the work to her memory. This document, in his own hand-writing, manifesting, as it does throughout, a deep feeling of affection, he had always preserved; and, during his last illness, he gave to it the sanction of a love stronger even than death, by enjoining on his children as his last wish, that they should prefix it to this the posthumous volume of his work, and thus pay a public tribute of respect to the memory of their mother. Willingly do we perform this sacred duty. It is indeed fitting that they who in life were inseparably connected, no less by the bonds of an earthly marriage, than by the more intimate union of mind and heart, should forever remain associated in the memory

* The publication was indeed decided upon in a family conclave, in which there was no dissenting voice.

of every reader of this work, as those to whom he is jointly and alike indebted for any pleasure or profit which he may have derived from its perusal.

As early as 1826, Dr. Bowditch first perceived in his wife the symptoms of that fatal disease which had deprived him of two sisters, and which, after the lapse of eight years, was to remove from him a still nearer friend. At intervals during this period, his wife enjoyed her usual health, and her accustomed cheerfulness never deserted her. She gradually became more and more feeble. Aware of her situation, and resigned to it, no one except her confidential medical adviser heard from her lips those convictions of her approaching end, which she knew, if expressed to them, would send sadness to the hearts of her husband and children. They were not, however, deceived. When, a few days before her death, she was borne in a chair by two of her sons into that library where she ever delighted to sit, it was only her pale countenance and debilitated frame which told us — and they did, alas! tell us but too truly — that soon one seat would be vacant, and one voice silent, in that assembled household. The blow, however, fell suddenly and heavily at last. We were awakened at midnight, and told that the fatal hour had come. To him who first reached her apartment she extended her hand, and, giving to his a gentle pressure, — a proof of consciousness and of love, — she murmured a few words so feebly that they did not reach his ear, but they were distinctly heard by her attendant: "My dear, you have come to bid me farewell." She died also in the presence of her eldest children. The unbroken slumbers of the youngest left them, for a few hours longer, happily unconscious of their

loss; and one was destined to learn the event in a distant land, who therefore had not a personal knowledge of those consoling circumstances which a brother's pen could at best but inadequately describe. It was truly, as the historian of America* has said, when speaking of a similar death-bed, "too serene for sorrow, too beautiful for fear." The wish which she had often expressed had been granted. She died before her husband, April 17, 1834, and was followed to the tomb only by those few whose home had ever been gladdened by her presence.†

Dr. Bowditch bore this heavy calamity as a Philosopher and a Christian. The early morning witnessed the funeral obsequies which he attended; and that forenoon saw the Actuary of the Life Insurance Company engaged in his usual routine of business, and at intervals examining the proof-sheets of this work, upon whose progress he was never more to look with a pleasure heightened by her participation; and the kindly ministrations of time were aided by this cheerful discharge of duty, and by this devoted pursuit of science, till he was himself summoned to receive the glorious rewards of eternity. To the stranger he appeared as he had ever done before. To his friends and family his character displayed a strength and grandeur never until then fully appreciated. Most deeply, however, did Dr.

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* George Bancroft. See his History of the United States, Vol. I. p. 388.

† Trinity Church, in Boston, was rebuilt after Dr. Bowditch removed to this city; and he became proprietor of one of the new tombs constructed beneath it. On the day of his wife's funeral, he executed an instrument transferring this tomb to his four sons in trust, as the future burial-place of himself and his descendants. That trust has already been fulfilled towards himself, and also towards a granddaughter, born subsequently to his death.

Bowditch feel this loss; and sometimes, particularly during his own last illness, he alluded to it with much sensibility. His countenance, after her death, exhibited, more frequently than before, a degree of thoughtfulness sometimes amounting almost to sadness. Indeed, he frequently stated to his children, though the fact may not have been apparent to the public, or even to his friends, that though life had still many charms for him, it had lost forever what he had always regarded as its brightest attraction. And we felt that this event had devolved upon us additional duties of filial tenderness and regard towards him who had been so severely bereft.

The various other incidents of Dr. Bowditch's life, during his residence in Boston, which led to the display of his peculiar talents and virtues, were few of them so conspicuous and remarkable as to be especially deserving of selection, though scarce one can be mentioned which would not add greater clearness to the reader's previous impressions. He one day fearlessly seized a carman who was cruelly beating a horse, and obliged him to desist by the mere alarm which his vehement and indignant manner inspired, though in bodily strength wholly his inferior. When Lafayette visited this country, Dr. Bowditch found himself, he hardly knew how, in the street near his chariot wheels; and amid the acclamations of the multitude, he too waved his hat and joined his voice to the praises of a virtuous and honorable life, which were then spontaneously rising from countless numbers of grateful citizens.

When a Roman Catholic school, in the adjoining town of

Charlestown, occupied by defenceless females,* was attacked at night, and its frightened inmates dispersed by the imprecations and torches of a band of deluded fanatics, he felt indeed that the fair fame of the state had received a deep, if not an indelible stain, and that the same town which is memorable as the scene of the first of freedom's battles in modern times, would also exhibit a monument of the most ruthless violation of private rights. He most openly expressed his abhorrence of this act, and calling upon the Bishop, whose church and residence almost adjoined his own, said to him, "Though our forms of worship are the most opposite and widely separated of all the creeds by which the Christian church has ever been divided, upon this ground I make common cause with you. This act has awakened me from a pleasant dream of security, and shown to me that the fanaticism of one class of this our orderly community, if it had the power, would not want the will, to attack with fire and sword all those whose peculiar modes of faith or religious institutions should happen to excite suspicion or incur hatred." And he at the same time gave him a small sum toward the immediate relief of those whom the flames had deprived of the necessaries of life. In recollection, doubtless, of this incident, the bells of the Catholic church were prevented, by orders from the Bishop, from being rung during Dr. Bowditch's last illness, — although it was at the season of Lent, — "that the last days of a good man might not be disturbed."

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* The immediate cause of this outrage was the supposed confinement of a female against her will; and this belief was chiefly occasioned by the popular prejudice against Catholics, convents, and nunneries.

Such, indeed, was his respect for the law of the land, that, when he had but a few days to live, he expressed the determination to make the effort to see the Governor of the Commonwealth, should he again call to inquire respecting his health, that he might assure him of the pleasure he felt at a recent act, by which he considered the law to have been suitably vindicated; namely, the disbanding of certain military companies, for an open violation of discipline on a day of public parade. The interview accordingly took place.

The existence of domestic slavery in the Southern States of the Union is a subject of so much importance, and its discussion has been the source of so much excitement in the community, that it may perhaps be proper briefly to state Dr. Bowditch's views in regard to it. Considering slavery to be one of the greatest of moral evils, his whole principles and sympathies were on the side of the oppressed. He scorned the selfish and timid considerations by which many were led to refrain from or to check the free discussion of its character and tendency. It was, however, a subject upon which he thought and acted for himself. The blacks he regarded as a race of men naturally less intelligent than the whites; and he believed that their present servile condition had so degraded them, that an immediate emancipation, extorted from the slaveholders, while it would find the slaves ill fitted for self-government, would also prevent the experiment from having that fair chance of success, which would be afforded by a cordial coöperation of their former masters. He would gladly have seen a national debt, even of immense magnitude, voluntarily incurred for the purpose of accomplishing this object, and at the same time

indemnifying the slaveholders, and thus securing to the slaves their aid and good-will. Indeed, under the original compact made between the several states, he did not think that the *moral* right existed in the free states to attempt to compel the emancipation of the slaves without making such compensation. And though Congress has exclusive jurisdiction within the District of Columbia, he did not think that, even there, the measure of the immediate abolition of slavery should be introduced, without first obtaining the consent of those states by which the District was ceded to the general government. He had the greatest horror at the thoughts of the proposed annexation of Texas to this Union, and was delighted with Dr. Channing's pamphlet, as he would also have been with Mr. Adams's speech in Congress upon this subject. He was in like manner utterly hostile to the admission of any new slave-holding state into the Confederacy. He often said that he never wished to shake hands with, or even to see, a northern man who, surrounded by free institutions at home, had voted for any extension of the evils of slavery. Such a person he deemed rightly characterized as one of the "white slaves of the north." Though he did not himself approve of all the views and measures of those who advocated the immediate abolition of slavery, he admitted that no great moral or religious revolution had ever been accomplished except through the agency of a few enthusiastic and excited spirits, whose apparently excessive and over-zealous efforts at last aroused *the many* to a sound, moderate, and successful reformation of abuses. Such he hoped would be the issue of the like efforts in the present instance. He considered the movement begun which would sooner or later prove fatal to this institution.

Upon one occasion, Dr. Bowditch was introduced by a friend to a stranger, who had heard much of his reputation, and was obsequious and almost servile in his manner of addressing him. Dr. Bowditch replied with stateliness and reserve. After the interview was ended, the stranger said, "If there does not go an aristocrat, there never was one;" to which remark the friend replied, "He an aristocrat! I care not how many such we have among us. The truth is, you treated him as one, and he despised you for your cringing manners, and want of a proper self-respect."

At the time when Dr. Bowditch was preparing to leave forever the home of his ancestors, almost his last act had been to repair with pious reverence the dilapidated monument beside which he had seen his grandmother's remains deposited,* and beneath which reposed the ashes of all her relatives of many former generations — the tomb of John Turner. In September, 1835, the board whose peculiar province it was to *take care* of the burial-grounds of Salem, finding several tombs out of repair, advertised them for sale, and unceremoniously ejected the remains of some who, in their day, had been Salem's greatest benefactors. The act was at first the result of a want of due consideration in two or three

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* Dr. Bowditch often mentioned that his grandmother, on her death-bed, refused to be buried in this tomb, saying that, many years before, at the funeral of one of the family, a mourner took up her father's skull, and holding it before her, said, "This is the skull of an Indian warrior." She seemed to have a prophetic dread of the possibility of the outrage subsequently to be committed, and preferred that her remains should be consigned to the safer custody of her parent earth.

individuals, members of this board; but finding themselves actually committed by it so far that they could not retract, they induced their associates officially to adopt and defend the measure. The tomb in question was thus violated. Dr. Bowditch was indignant at an act which was alike revolting to his private feelings, at variance with every dictate of humanity and civilization, and which, if acquiesced in, would be a permanent public disgrace to the city which he loved. He headed an address to that board, and subsequently one to the selectmen. The public press was loud in its denunciations of the act. The board reconsidered their decision. None indeed, apparently, at last regretted it more sincerely than themselves. Dr. Bowditch said, on this occasion, that had the act been rendered necessary for the promotion of any public object, he would have cheerfully surrendered his own private wishes to the interests of the community. Accordingly, when, a short time afterwards, the city authorities of Boston wished to lay out an avenue or public walk through one of the burial-grounds, — and had met with such sincere and vehement opposition from two or three individuals, whose relatives were there buried, that a useful public measure was in danger of being abandoned, — Dr. Bowditch waited on those gentlemen, and, sympathizing as he did most fully in all their feelings, yet wholly succeeded in conquering the repugnance, which he satisfied them ought to yield to other and higher considerations.

Dr. Bowditch was in person under the common size. His hair, originally of a light color, was entirely gray at the age of twenty-one years, and gradually became of a silvery whiteness. His high forehead, bright and penetrating eye, open and intelligent

countenance, are, we think, accurately shown in the annexed engraving; though the changes which, with the rapidity of lightning, passed across those expressive features, as they in turn exhibited the feelings of benevolence, or the most intense thoughtfulness, — at one moment radiant with smiles, and at another dark with virtuous indignation, — can never be realized but by such as have themselves seen and studied there the outward manifestation of all that was most excellent and beautiful in his character. His, indeed, was a face never to be forgotten. Intellect there altogether predominated over sense.

He always possessed great bodily activity, and late in life he might often be seen running along or across the streets with as much quickness as in youth. In his daily walks, indeed, he seemed constantly eager to outstrip all his competitors. He was very methodical in his habits of exercise, seldom walking less than five or six miles each day. He fully appreciated the importance of this practice to a person of sedentary pursuits. Throughout the summer, he was in the habit of driving with a horse and gig eight or ten miles in the afternoon; and during one or more seasons, he mounted his horse and rode before breakfast.*

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* He always drove with great rapidity. A friend, who was riding at a very moderate rate, was once passed on the road by him, and when they next met said, "You whisked by me like the tail of a comet." At another time, a person called upon one of Dr. Bowditch's sons, and, after a few remarks upon the furious mode in which some *young* men were in the habit of driving, demanded of him compensation for a slight injury which had been thus occasioned, as he believed, by him. The supposed *youthful* offender proved to be Dr. Bowditch himself, by whom, however, the blame of the accident was laid wholly upon the

It has been strikingly said of him that "*he was a live man!*"* All his processes of body and of mind, all his thoughts, all his actions, were full of life. When any thing pleased him, he would rub his face with his hands, or rub his hands together, with an expression of the most free and unrestrained delight; and when any thing displeased him, and he felt excited enough to determine to speak, he always, as he said, found himself upon his feet, without knowing how he got there; and except in a standing position, his tongue never became effectually loosed. On such occasions, his vehement and earnest manner was most impressive in its effect upon the beholders, and it truly appalled the individual against whose unjustifiable opinions or conduct his censures were directed.†

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other party. He once attended Commencement at Cambridge with quite a spirited horse, and in the evening started to return to Salem. His horse, however, seemed very unwilling to move, and almost insisted upon turning into the yard of a clergyman's house on the road. Dr. Bowditch resorted to the argument of the whip, and at last reached Salem, after a drive at the rate of about three or four miles an hour. On the contrary, a country clergyman, who had also attended Commencement, was very much alarmed at the rapidity with which his horse carried him home, and at his impetuous and almost ungovernable movements. The double mystery was easily explained; and when the clergyman received back his own animal, he said, "I am delighted, Dr. Bowditch, that my poor beast fell into such good hands. If the mistake had happened, as I was afraid it had, with some gay young collegian, my horse would have been terribly beaten." Dr. Bowditch said that his conscience smote him as he listened, and thought how little cause there was for this self-congratulation.

* See anecdote in Judge White's Eulogy, p. 57.

† It has been observed of Dr. Bowditch, that, "though no 'rude and boisterous captain of the sea,' there may have been occasions when a happier combination would have been produced, had the same measure of the *fortiter in re* been blended with more of the *suaviter in modo*." (*North American Review, January*, 1839.) We do not deny that such instances sometimes, though they rarely occurred. Dr. Bowditch, in a conversation with his eldest son

Dr. Bowditch generally enjoyed excellent health, the result, beyond doubt, of his regular and temperate habits. At the age of thirty-five years, however, his life was considered in danger from the disease of which, at that precise time, (1808,) his two sisters were dying. He, like them, was attacked with the alarming symptom of bleeding from the lungs. Upon this occasion, his friend Thomas W. Ward, Esq., relinquished all his own engagements, and devoted himself to the invalid during a journey of several weeks. As they were leaving an inn in a town about twenty miles from Salem, the landlord beckoned to Mr. Ward, and asked him where his friend lived, and, on being told, advised their return, in the apprehension that the latter could not even live to reach the next stage in their intended route. By the invigorating effect, however, of the exercise thus taken in the open air, his disorder was checked, and his health completely reestablished. Until this time, he had never tasted wine. It was then prescribed as a medicine. When a young man, — but at what precise age is not known, — he had agreed to sit up with a friend who was ill, and, being unwilling that so much precious

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upon this subject, once said, " There is a gentleman in this city, (naming him,) who possesses such courtly manners, that he can utter a bitter sarcasm, or express profound contempt, in the most mild and conciliatory language. Such, however, is not my case. If I am obliged to measure my words, or even to think the least about them, I lose the substance of what I intended to say. When I feel that I cannot remain silent, I speak — and in such terms that *no one can mistake my meaning*. But, my speech being ended, the whole affair is over. I pour out, indeed, the contents of my vial of wrath, but I then let it be seen that it is left empty." And though it is certain that his was not that guarded demeanor, which, upon every occasion of life, prevents the utterance of a word which it may be desirable to recall, it is also certain that this was a source of more regret to himself than of pain to others.

time should be idly spent, he passed the whole night in mathematical computations. He was much alarmed, the next morning, to find his vision obstructed by little motes or specks passing before him in grotesque variety and constant succession. It was ascertained that he had taxed his eyes beyond their powers, and it was two years before he was able again to use them freely.

Dr. Bowditch removed to Boston a few months before the necessary arrangements could be made for his family to join him in that city. Hardly had he been there two days, when, under the influence of a disorder to which he had never till then been subject, he fell senseless in the street. It happened that the hospitable mansion of the same friend, to whom, as just stated, he had before been so much indebted, was now freely offered him as a temporary home. Only once again did this vertigo cause him to fall in a similar manner; and then great indeed was the consternation excited in his family as they perceived a crowd approaching bearing his apparently lifeless body, while, from a wound in his head, blood was flowing profusely. A tendency to this species of attack, however, always continued. But, ascertaining that it was brought on by exercise immediately after eating, and that it was always carried off by sitting down and resting a few minutes, he avoided its exciting cause, and thus never experienced any subsequent ill effect from it. It was rarely, however, after this, that he walked alone. And often, when attended by one of his sons, has he stopped to look in at the window of some shop which they were passing, or even walked in, and asked for a seat, because he felt the sure indications of approaching danger. He well knew the delicate organization

of human life, upon which depend alike all the functions of the body and of the mind, and he often expressed his surprise that what seemed so fragile should yet be able to resist so much. One of his favorite quotations, indeed, was that of the beautiful lines by Watts —

"Strange, that a harp of thousand strings
Should keep in tune so long!"

And it should ever be remembered that the publication of this work was commenced after he knew that he could no more expect the robust and fearless health of his youthful days.

Dr. Bowditch always continued his habits of early rising. He greeted the rays of the morning sun of summer as they first entered his library, and by hours of study anticipated its tardy beams in the winter. Often has he been heard to exclaim, as it then first met his eye,

"See, from ocean rising, bright flames the orb of day!"

with as much enthusiasm as at that period of his life when he had made the same glorious luminary his guide over the trackless deep.

The following may not be uninteresting as a strictly accurate description of each day of his life, for all the period of his residence in Boston:* — He had formerly been in the habit of walking before breakfast, but during this period he breakfasted immediately after rising, in the winter by candle light, and always before the rest of his family. He then applied himself to

* See the similar account, drawn up by us at the request of Judge White, and printed in the notes to his Eulogy, p. 70, &c.

mathematics, gaining from two and a half to three hours' study; after which he walked about a mile and a half, attended by one of his sons, and commenced the business of the day at his office a few minutes after nine o'clock. There also, as has been stated, mathematics was the occupation of all the moments left at his own disposal. He frequently walked home in the forenoon for a few minutes, as he found his eyes strengthened and refreshed by being at intervals in the open air for a short time.* Every day at two o'clock the office was closed, and he then walked as before, being usually accompanied by a friend who still lives to find in the recollection of this daily intercourse one of the most pleasing reminiscences of the past. He dined at a quarter before three, P. M. After dinner he indulged in a short "siesta," which lasted from fifteen minutes to an hour, sometimes even longer. He always awoke bright, and prepared to recommence his studies, which he pursued for about an hour and a half to two hours. He always, near the close of the afternoon, went to his office again, though it was not open for the transaction of business, to see if any thing needed his attention or explanation; and in the latter months of the year, he was frequently detained there a considerable time. He then walked a third time, usually with one of his sons, and returned to tea. At all his meals, his diet was perfectly simple. His health was indeed, latterly, wholly dependent upon the observance of a very exact and particular regimen. During the evening he continued his studies, and from

* It was from this motive that he performed his ablutions as regularly and frequently as the most pious Mussulman. A basin of cold water was as habitually resorted to by him upon entering or leaving his house, as his books were at other times.

time to time joined in conversation with his family, or threw aside his books to devote himself to his visiters and friends. It has been well remarked, that "you never saw the mathematician, unless *you inquired for him*," * as mathematics was a topic which he never obtruded upon any one. He had other and most abundant resources of knowledge, with which he could instruct or amuse. He always expected the members of his household to be at home by ten o'clock. The house was then closed, and he usually retired between ten and eleven. There is no doubt that, taking the whole year together, he got as much as six, and perhaps eight hours a day, for his mathematics, besides the time devoted to his business and other pursuits.†

Dr. Bowditch was never fond of reading works upon logic, or even upon moral philosophy, or any abstract speculations upon the nature and powers of the soul. He felt his mind perplexed rather than enlightened by most treatises of this sort. They produced, he said, upon him the effect described by Milton, as produced upon those who

> "reasoned high
> Of providence, foreknowledge, will, and fate,
> Fixed fate, free-will, foreknowledge absolute;
> And *found no end, in wandering mazes lost.*"

He *felt* that he was a free and an accountable agent, and he did

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* Christian Review, September, 1838.

† Astronomy even entered somewhat into his management of his family. Thus his children, for the first few years of their lives, on going into the library in the morning, if they had behaved well during the preceding day, received three dots on the arm from his pen, which he called "*the Belt of Orion.*"

not care to analyze very nicely the source of this feeling. He also considered the time spent in reading most works of imagination unprofitably employed. He preferred history and biography. Boswell's Johnson delighted him. Raynal's History of the Indies he read in early life with great interest, and he never forgot its facts or its peculiarities of style. The Éloges of Cuvier he regarded as master-pieces. There was, indeed, hardly a striking anecdote of any of the eminent men of the present and of former times, which he did not seem to have gathered up in the course of his miscellaneous reading; and his excellent memory placed them constantly at his disposal. He mentioned with approbation the remark, "Why read any thing which you cannot quote?" Not that he was himself ever in the least degree pedantic, or ostentatious; but only because he valued fact far before fiction.

Of late years, certainly, his reading was almost exclusively confined to mathematics. He owned the works of Scott, which he highly valued for their true delineations of nature, and for their freedom from the immorality which characterizes the pages of some of the earlier novelists; but he rarely indulged himself in the recreation of reading even *his* works of fiction. He reserved them, as he said, till the thermometer stood at 90°, and he read them when he did not feel the energy to devote himself to abstruse studies. His recollection of the characters and incidents of these novels was remarkable. He would dwell with delight on Jeanie Deans, and often recall some of the amusing and characteristic scenes of the Antiquary. The earlier volumes of Lockhart's

Life of Scott had been republished in this country before he died, and he had read them with avidity and delight. There were many traits in the character of Scott, as there described, which, as we think, greatly resembled his own; and those later volumes, which carry the reader with a saddened interest to the closing scene of his life, and which Dr. Bowditch never saw himself, spoke to us, who had been thus recently bereaved of a parent in every respect equally entitled to our love, with a peculiar pathos. We had seen the same lofty virtues displayed through many years, which invested the poet's death-bed with its high moral interest; and we actually beheld the euthanasia which, though mentioned by Scott, we fear he was himself hardly able fully to realize; and many of the precise expressions which had fallen from the dying lips of the one, had been also used by the other.—The works of Byron, on the contrary, Dr. Bowditch never admitted into his library; and many years ago he owned a small French work, in four volumes, which had been presented to him during one of his voyages, but which was not a book of very exemplary morality. It had engravings which attracted the notice of one of his sons, when he had begun to study French. Soon after, the books disappeared: Dr. Bowditch had burned them, though he had kept them many years on account of the donor, and the really beautiful execution of the work. He subscribed to very many periodicals, and by glancing his eye over them cursorily, he seemed to find out what articles were worth a careful perusal, and made himself master of whatever was important.

He used playfully to denominate as "the poet's corner" that

part of his library where were to be found Shakspeare, Pope, Milton, &c.;* and it is quite a remarkable fact, that upon the inside of the two leather covers, in which he kept the proof-sheets of this work while in the process of publication, and which were therefore constantly before him, he had entered in his own hand-writing extracts from Burns's "Cotter's Saturday Night," and the following stanza of Hafiz, the Persian poet, as given by Sir William Jones: —

"On parents' knees, a naked, new-born child,
Weeping thou sat'st, whilst all around thee smiled.
So live, that, sinking in thy last, long sleep,
Calm thou mayst smile, whilst all around thee weep."

So likewise there and in his Newton's Principia, we find copied by him verses of Voltaire and other French writers in honor of that illustrious author.† Among the poets of America, Bryant was his favorite. He has often said that he thought "The Old Man's Funeral" was one of the most beautiful poetical pieces in the English language. Never can it be hereafter perused by us without recalling one of the most interesting and touching scenes at the close of his own life. Dr. Bowditch often delighted to

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* He, a few years ago, expressed his satisfaction at having been tempted to read Milton again, by the beauty of a new Boston edition of that author. — *Mr. Young's Eulogy*, p. 81.

† Upon these covers he had also written the mottoes, "Ohne Hast, ohne Rast," (*Goethe,*) and "Ne tentes aut perfice;" with extracts from Virgil, Ovid, Lucretius, Halley, Cumberland, Bolingbroke, and Charles Lamb. Among the lines quoted from Voltaire are the following upon "The Academicians who measured the Earth in Lapland:" —

"Vous avez recherché dans ces lieux pleins d'ennui,
Ceque Newton connut sans sorter de chez lui."

quote the stanzas "On two Swallows that flew into a Church during divine Service," commencing,

"Gay, guiltless pair,
What seek ye from the fields of heaven?
Ye have no need of prayer,
Ye have no sins to be forgiven."

The author* was his friend, and he deemed that Boston might well be proud to own him as her son.

Dr. Bowditch was fond of music, and when young played a good deal on the flute; but he soon abandoned it altogether, as leading to an unprofitable employment of time, and the formation of bad habits. For the same reasons, he through life altogether abstained from the use of tobacco in any of its forms, and never played at any game of cards. Chess he also avoided, as not affording any relaxation of body or mind, and as leading to no useful or practical object. Dr. Bowditch was rarely induced to pass an evening at the theatre. Fictitious representations of life, either under tragic or comic aspects, always left upon his mind a feeling of dissatisfaction with its realities. But when he did go to hear some popular actor, his laugh was more loud and cordial, or the starting tear betrayed itself more readily, than if this had been an excitement to which he was more habituated. Much as he was gratified by the sight of innocent hilarity, he did not feel at home in the ball-room or crowded assembly. He seldom, it might almost be said never, went into general society, but nothing contributed more to his happiness than a familiar intercourse with his friends.

* Charles Sprague, Esq.

Dr. Bowditch was very quick in his judgments of character, and having formed his opinion, he was slow to change it. A moral failing once noticed in any one, he always associated with the idea of that individual; and a character which once attracted his respect and love he ever continued to regard with interest, apparently overlooking the slighter blemishes which a more intimate acquaintance may have disclosed. He had a few particular friends, in whose society he especially delighted. Thus while he lived at Salem, and also during his residence in Boston, there were three or four individuals with whom he associated more than with all his other friends and acquaintance together. They were the companions of his daily walks, and at their houses almost exclusively he made his evening visits.

Dr. Bowditch showed a like constancy and perseverance in any course of life, or in the prosecution of any measure which he had undertaken. Deciding only after due deliberation, he acted without the slightest hesitancy or vacillation of purpose. He believed fully in the scripture, "Unstable as water, thou shalt not excel." He has often reproved the use of the expression "I can't do it;" saying, "Never undertake any thing but with the feeling that you *can* and *will* do it. With that feeling success is certain; and without it failure is unavoidable."

Dr. Bowditch's intercourse with his family was entirely free and unreserved. No feeling of restraint was ever inspired by his presence. Among his children, he was himself a child. One occasion is remembered, when, after partaking with them in some

frolic, he laughed at his own want of dignity, and proceeded humorously to contrast the scene around him with a description of the formal observances and requirements of past times. A model for the imitation of all parents, he avoided every thing calculated to interrupt the mutual confidence and familiarity which existed between him and his family. Though readily granting any reasonable favor, he was never weakly indulgent. Inculcating by precept and example the most valuable lessons of life, affection ever prompted and directed his admonitions, and a sound judgment always controlled the impulses of affection. The censure of an instructer uniformly brought with it the weight of a father's displeasure; since Dr. Bowditch never weakened the authority which he had thus delegated to another, by expressing a doubt whether, in any particular instance, it had been judiciously exercised. He devoted much of his own time (though not so much of late years as formerly) to the instruction of his children, particularly the elder ones; his chief endeavor being to awaken in them a taste for mathematics. He persuaded one of his sons to learn French when very young, by the stimulus of a small compensation for the translation of a certain number of pages. The result satisfied him, however, that this was inexpedient. The best works in the language were read before they could be duly appreciated, and they could never afterwards be read with the interest of a first perusal. His experience, also, led him to acquiesce in a child's pursuit of any study, though comparatively useless in itself, if voluntarily undertaken, and prosecuted with ardor; as he believed that it might be attended with incidental advantageous results, and that it would certainly assist in forming a habit of industry.

If a predisposition were manifested for any occupation in life, the father candidly stated his own opinion, and enforced his views by such arguments as occurred to him, but left the final choice of his child free. In one instance of this kind, he, by his advice, induced the adoption of a profession other than that for which a slight preference had been at first felt; while in another case, he readily yielded at last his own wishes to the strong predilection which one of his sons manifested for a seafaring life; judging wisely in both cases. He often spoke of the feeling of independence resulting from the consciousness that one is able to maintain himself by his own exertions, saying that "A man whose *capital* is in his head is free from all anxiety about investments, and has a much more certain income than any one else." He early impressed upon his sons the necessity which they would be under of earning their own livelihood, and he regarded it as a most fortunate necessity. One of his eulogists says, "He would not, as we happen to know, have accepted the offer of a fortune for one of his sons, at the risk of any unpropitious influence upon his opening mind and character."*

As his children grew up, they became his companions. His most intimate friends were those who day by day met around his own fireside. To them his most secret thoughts were disclosed, except only in those cases where silence was a duty which he owed to others. Each of his children may well apply to him (as was indeed done by one of them who communicated in a letter to a younger brother the information of his dangerous

* Judge White's Eulogy, p. 50.

illness) the beautiful language in which Marcia speaks of Cato: —

"Though stern and awful to the foes of Rome,
He is all goodness, Lucia — always mild,
Compassionate, and gentle to his friends;
Filled with domestic tenderness, — the best,
The kindest father! I have ever found him
Easy and good, and bounteous to my wishes."

We feel assured that only one who had often seen Dr. Bowditch by his own fireside, could have penned the resolutions received after his decease from the Faculty of a neighboring university, (Yale College,) which state that they "respectfully and feelingly sympathize with the children of the illustrious deceased, whose memory, justly dear to the country which he honored, is cherished still more affectionately by those who were so happy as to call him their *father*."*

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* We have thought that the reader might be interested in the following remarks of Rev. N. L. Frothingham, D. D., being an incidental notice of the death of Dr. Bowditch, in a discourse delivered at the First Church in Boston, on Sunday, March 25, 1838: — "We need not wait for the consummations of a future world, to see that the righteous spirit is more than a match for death. It wins the victory even now. The eyes of the public have been turned, within a few days, to a remarkable instance of this; and they will long remain fixed upon so serene and noble a spectacle. A great man has been struck down among us. A good man has gone his way from us. His was a mind eminent among the loftiest, and as benignant as it was strong. His renown, that travelled over the world, was the least portion of his deserts. His unaffected goodness was as noble as his genius. His character was as striking as his fame. Who, that ever saw him, forgot him? There was a divine stamp set upon his clear, high brow. A healthy vigor looked out of his cheerful but thoughtful eyes. He was in the midst of the abstractest science, and in the midst of the world's busiest interests, at the same time, — not absorbed by the one, not disturbed by the other, seeing calmly through

We have endeavored, by these various details, to lay before the reader such facts and circumstances as would in some degree

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both. Strangers might well turn as he passed, to ask who he was; and his most intimate friends would feel that they themselves knew of him but the half.

"I can hardly bear to hear him described chiefly as an Astronomer or a Mathematician, — though among the most illustrious that have lived, — he was so honestly, heartily, bravely, entirely, a man. There was something in him brighter than talent, and deeper even than that profound knowledge which led the way with a modest silence where there were few intellects that could so much as attend him. It was the light and depth of a true soul. While he demonstrated the subtlest problems, and scaled starry heights, he displayed the simplest, the most practical, the most engaging worth. It was an instruction to behold him. All the affections of youthful life beamed from his face. His feeling was as keen as his intelligence. To be with him was a wholesome delight; for his was the energy and the very inspiration of good sense, — a free, natural, unseducible spirit, playful and sublime. He was full of humanity. And in using that word, I do not understand it in the technical sense in which it is commonly taken, being applied often to the weakly charitable, and assumed often, as if it were exclusively their own, by visionary schemers and itinerant philanthropists. But I mean that he was rich in the elements and endowments that best distinguish our nature; wise beyond books; benevolent without theory, or feebleness, or parade; active, affectionate, manful; pursuing his way without fear or favor; poised upon himself, and seeming to be lifted by a calm philosophy above all the groveling interests, and fanciful systems, and transient fashions, and heated delusions of the world.

"Alas, that such a one should be withdrawn in the midst of his labors and glory! But that 'alas' he left for others to say. For himself, it was neither expressed nor felt. He left life as cheerfully as he had traversed it. There was no difference between his last days and those which had gone before them, but that they were still more admirable. He had thought as a philosopher. He showed now the most precious fruits of his thought. He submitted and suffered like a Christian disciple. He expired like a saint. Such a 'euthanasia,' as he himself called it, with nothing but peace and hope in it, exhibits the full power of Christian principle. It ought not to be confined to the knowledge of a few, and cannot be. It will spread as far as his name, and do good, as his studies had done before." — *MS.*

enable him to form his own judgment respecting the most striking peculiarities which marked the habits and character of Dr. Bowditch. We thought it not advisable to attempt an elaborate analysis of what we felt ourselves incompetent fully to measure and comprehend. In his general manners he was affable and courteous, social in his feelings, and in all the domestic relations most kind and tender. Crowned with the honors of science, he retained the modesty and simplicity of a child. Endowed with the highest genius, none was more wholly free from pride. Frank, open, and naturally without reserve, he could yet be most cautious and discreet. No less ardent than steadfast in his attachments; easily seeing and sincerely regretting the foibles or faults of his friend, he yet loved him still. Having a boundless extent of mental and moral resources, their varied display gave to the longest intimacy the interest of a recent acquaintance. With a benevolence as universal and as active as ever dwelt in the heart of a philanthropist, his treasures of knowledge were freely imparted to the world: and much of his valuable time, and of the small earnings of his honorable industry, was devoted with judicious and unostentatious liberality to the promotion of the happiness and welfare of others. Holding in slight estimation the services which he thus rendered, he manifested a lively and enduring sense of kindness received. Quick and excitable, indeed, when he saw the occasion, he was yet most placable and forgiving, and never harbored ill-will for a moment. The occasional indiscretions of an ardent temperament he redeemed by displays of the most magnanimous virtue. Devoted to the loftiest speculations, he was not neglectful of the most trifling and minute duty. Undeterred by fear, uninfluenced by any prospect of advantage, he followed

truth, and obeyed conscience; and the popular clamor, and even the coolness of some whose friendship he valued, were alike unheeded. He possessed an energy, promptness, and decision, equal to every emergency, and which insured success in each undertaking. He endeavored to save each moment of time, and apply it to the uses of eternity. Governed by the highest and purest motives, the most distinguishing and beautiful trait of his character was his perfect integrity. Never was he more truly indignant than at the want of this quality in others. Any thing, indeed, mean or dishonorable, and especially any thing like fraud, equivocation, or falsehood, always received his sternest rebuke.* It has been truly said, that, in questions of morals, you could no more becloud or mystify him than in questions of *quantity;* that whatever he saw in *right* or *wrong*, he saw as *clearly* as in *plus* or *minus;* and that he carried out a *practical obedience* to whatever he *believed*, alike in both cases.†

On January 1st, 1838, Dr. Bowditch, to the casual observer, seemed likely to enjoy many more years of health and strength. Nor had he himself any idea that his brief days were already numbered. To a female annuitant who then called at the office for her quarterly payment, he said he felt "very well;" but she

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* Thus, many years ago, in Salem, one of his sons, at a female school, being in an apartment with one other boy, threw a ball which broke a mirror; and his comrade advised concealment. He was so much pleased when his son told the truth immediately about the affair, that, though he was then obliged to live with rigid economy, and the payment was really inconvenient to him, he bought a new mirror, and expressed far more pleasure at the son's performance of so high a duty as telling the truth, than he did regret at his carelessness.

† Christian Review, September, 1838.

was to receive her next payment from the hands of a stranger. He had attained the precise age at which two of his ancestors had been called to the tomb; and in the midst of this apparently perfect health, in the full and active enjoyment and exercise of all his faculties of body and mind, and surrounded by so much to make life desirable, his own summons came to quit it. He received it with the calmness of a Philosopher, and the cheerfulness of a Christian. After having experienced slight pain and uneasiness for three or four months, about the end of December, he mentioned his symptoms to his third son, — a physician, — who wished him immediately to submit to his prescriptions. He replied that he had not then leisure to be ill; that the affairs of the Life Insurance Company required his constant attention; and that he could not put himself under the hands of the doctors until after the payments of the first part of the month of January had been completed. As soon as possible, however, after the period thus mentioned, his son, who considered the symptoms to be of an alarming character, persuaded him to call in the aid of the same eminent medical adviser and friend,* to whose attentions his mother had been so much indebted during her protracted illness. Almost immediately it was decided that the disease under which he labored was a tumor in the abdomen, of a dangerous and probably a fatal character. The symptoms rapidly became more and more decided, and at intervals the most acute pain was experienced, lasting sometimes for twenty or thirty minutes, and from which relief could only be obtained by means of hot applications. His stomach now rejected all solid food, and could only bear the slightest

* James Jackson, M. D., now President of the American Academy of Arts and Sciences.

quantity even of liquid, and sometimes none at all. Death by starvation was in prospect. A general debility of the whole system was the unavoidable consequence of the small degree of nourishment which he was able to take. He became emaciated to a degree of which even his consulting physician, with all his extensive practice, had never before seen an instance. The disease had wholly gained the mastery over his body. But his mind seemed to acquire strength and energy as the crisis approached. He was fully apprized of his danger, arranged all his worldly affairs, and executed his will in a manner with which he expressed himself perfectly satisfied. He continued to sit in his library part of each day, until the day before his death, when he for the first time was unable to rise from his bed. He rode to his office every day until February 17, not quite four weeks before his death. It was an elevating spectacle to see such an unconquerable spirit struggling to discharge every duty, even when the body had almost refused to perform its functions, and when death was most legibly written upon the countenance. Subsequently, the secretary of the company, by his desire, came each day to his house with such papers as required his signature, or with the books for him to examine; and as lately as the 7th of March, he transmitted to the company whose affairs he had so long superintended, the complete account of the transactions of the preceding month, drawn up as usual; and with it he sent a farewell communication, which he had dictated and signed. In this he states that his declining health would probably make it the last which he should ever address to them, and takes an affectionate leave of those who had had the control of the institution, and of those who had been associated with him in

its management. He also alludes to the length of time during which the institution had been under his charge, and earnestly commends its interests "to that Providence which had seen fit to bless their efforts to make it deserving of public regard." To this letter he received a most affectionate reply, not attested as an official act by the secretary of the company, but personally signed by each of the twelve directors, who assured him in the strongest terms of their respect and regard, of their conviction of the value of his past services, and of their deep and sincere sorrow for his serious illness. The promissory note upon which he made the endorsement before mentioned, has upon it the latest specimen of his hand-writing.

In like manner he continued to correct the proof-sheets of this volume; and within a week of his death, he said that the sheet which he was then revising contained the discussion of a difficult problem; that M. Poisson thought he had made an improvement upon the method of the author, whereas he believed he had shown that, on the contrary, the supposed improved method was fairly deducible from that of La Place: and he added, "I feel that I am Nathaniel Bowditch still — only a little weaker." The last page upon which his eye was ever to rest, was *the thousandth*, though no part of the volume subsequent to the six hundred and eighty-fourth page has received that final revision which he was accustomed to bestow upon it, after the friend before alluded to had laid before him the list of typographical errata, which he had discovered.* The reader will therefore pass a charitable judgment

* Whenever one hundred and twenty pages were printed, Dr. Bowditch had them bound

upon this latter portion of the volume. Dr. Bowditch hoped to be spared to finish its few remaining pages. It called forth the last efforts of his powerful intellect, and afforded him amusement and solace almost as it were to the hour of death.

He continued to take a lively interest in all such passing events as he considered to have an important bearing upon the welfare of the community. He was able to see a few, and only a few, of his most valued friends; and he conversed with them and with his family upon his approaching separation with the utmost resignation and calmness. To two of his most intimate friends, then absent in Europe, he sent a message, assuring them of his continued attachment. Throughout his illness he was only "watched by eyes that loved him." The kind offices of others were not needed. Filial hands alone ministered to his wants; filial hearts alone anticipated his wishes. To his eldest daughter, as she stood hour after hour behind his chair, or beside his bed, gently rubbing his head in the manner which had ever been agreeable to him, he playfully remarked that her fingers were like "Perkins's Tractors," and that the process itself was "Terrible Tractoration." He said of her to one of his sons, "I feel respecting Mary to-day, as I did the day when she was born;" and to the inquiry how he then felt, he replied, "It was the happiest day of my life, for I then first had a little daughter."

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in a pamphlet form, and sent them to Professor Pierce, who, in this manner, read the work for the first time. He returned the pages with the list of errata, which were then corrected with a pen or otherwise in every copy of the whole edition.

He once said to her in a smiling manner, "You seem to my eyes to be forty years old. This expression in itself may not be flattering to you; but I mean by it, that you have compressed the services of many years into the brief period of my illness." And one day, as he was examining his papers, and burning those he thought of no value, he met a copy which he had made several years before of those beautiful lines in Scott's Marmion —

> "O woman, in our hours of ease,
> Uncertain, coy, and hard to please,
> And variable as the shade
> By the light, quivering aspen made,
> When pain and anguish wring the brow,
> A ministering angel thou!"

This he handed to her, saying that of the compliment contained in the two last lines she was certainly deserving.*

With no less assiduity did his younger daughter delight to discharge such kind offices as did not require the greater skill and experience possessed by her elder sister; and he who of late years had always assented to her request to be the companion of his noon-day walk upon the Sabbath, and who indeed had always regarded her with peculiar tenderness as the child of his

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* During his illness, he examined and burned very many papers; and after his death, it was found that he had probably, in this manner, and at this time, destroyed all the correspondence between himself and his wife before and after marriage; and also a manuscript folio volume, in about seventy pages of which his eldest son had, several years before, recorded the details of his early life, as taken down from his own lips, and which volume had been left in his library that the narrative might be continued from time to time.

old age, now made a like affectionate return for these her efforts to please him. His eldest son he once addressed in the language of Scripture, " My first-born, my beloved." He employed him to draft his will, and all his various letters and other documents. His second son attended to his requests in regard to all matters of business, and the arrangement of his pecuniary affairs. He was particularly desirous to discharge all his debts, however trifling, before he died, or to leave the means for their instant discharge afterwards. To this son he mentioned, the day before his death, a female, of whose little concerns he had always taken care, and said to him, " I wish you to call upon her before you visit any one else, *after attending my funeral*, and inform her that I have transferred her to your charge, and that you will supply my place to her through life." His two eldest sons no longer resided under the parental roof, and as they were one evening leaving his presence, he said to them, " Farewell, my sons; my blessing goes with you." His third son had the peculiar privilege, as his medical attendant, to pass nearly all of each day, and the whole of each night, in his apartment, enjoying an unreserved intercourse with him of the most elevating character; and boundless indeed, to a degree, as he admits, far beyond his deserts, was the gratitude which owned his constant attentions. His youngest son was, like the elder ones, absent from his father's house, but upon learning his illness, each evening saw him a visiter there; and on the last night but one of his life, when an elder brother intended to act as a watcher, he asked and readily obtained his father's consent to be allowed that privilege. The teachings of that night he will never forget. He had asked his father for a kiss when leaving him upon one of these evening

visits, and received the reply — "Kiss you, my dear! Yes, if I die in the act!" At another time he said, "I leave behind me a family of love, which, I rejoice to believe, will long continue a united household, after I shall have been removed from it by death." To her who in early years had been left alone among strangers, he recalled the dying words of the sister who had then intrusted her to his care — "Promise to be a father to my child;" and he stated that he had always endeavored to redeem the pledge then solemnly given, and had never intentionally made any distinction between her and his own children; and that he had made an adequate provision for her by his will, that she might not feel herself dependent even upon them, though he doubted not for a moment, that each of them would always be ready to welcome her to his home and his heart. He then thanked her for that performance of household duties which had so much lightened the labors of his wife and himself, and added that if any occasion had ever occurred (which there had not, to his knowledge) when he had shown her less affection than the kindest parent ought to have shown to the most dutiful daughter, she must overlook and forget it as accidental. In various ways he constantly showed the most considerate affection for his family. Thus he said that he had himself found great consolation, after the death of friends, in reflecting that they met their fate with a cheerful and resigned spirit; and he added, "I am happy that I can leave to you the same consolation." And we indeed saw in him a soul perfectly calm and serene. Two nights only before his death, after awaking at midnight, and speaking a few moments very impressively respecting his approaching end to two of his sons who were

present, he yet sank again, apparently in less than five minutes, into the most tranquil sleep.

To one of his sons, who, as he thought, was not always sufficiently careful of making remarks which, though innocently intended, might give offence, he said that upon a certain occasion he had himself, in speaking to a female friend, alluded to one of her features as not handsome; and that after she had gone, his wife blamed him for doing so, because the lady in question might have received the impression that he thought her countenance disagreeable; when in reality there was scarce a being in the world, to whom they were both more attached, or upon whose face they were always more delighted to look; that this advice of his wife, dictated by the truest kindness of heart, he had often reflected upon, and, as he hoped, had been benefited by it. He then said, "There is no friendship or connection so intimate as to justify a disregard of a constant endeavor to please;" and added that upon one occasion, when his wife had appeared in the library in a new dress, and he, happening to be engaged in his studies, had not noticed the circumstance, she seemed quite disappointed, and said to him, "I purchased this dress on purpose to please you, as being of your favorite color, and now you do not seem to care the least about it." He added, "I immediately left my books, told her she must lay the blame not upon me, but upon mathematics; that the dress suited my taste exactly; and thus succeeded in restoring her cheerful looks. And ever afterwards," said he, "through life, I endeavored, whenever she came into my presence, not to omit to express towards her, outwardly, something of that pleasure which I always really felt."

To another of his sons he was speaking of truth as never to be in the slightest degree or upon any inducement disregarded, and holding up his finger, and repeating the words with most solemn emphasis, said, "Follow truth — truth — truth! Let that be the family motto." So many, indeed, are the touching incidents of his last illness which throng upon the memory of his children, that a selection is almost impossible, where each was such an exhibition of moral greatness. He had expressed the wish to be approached with smiles and cheerfulness. Feeling no melancholy in his own soul, he was averse to the manifestation of it in others. Observing, therefore, one of his family whose countenance was marked with sadness, he called for his volume of Bryant, and opening at his favorite piece, read,

> "Why weep ye, then, for him who, having won
> The bound of man's appointed years, at last, —
> Life's blessings all enjoyed, life's labor done, —
> Serenely to his final rest has passed?"

He then proceeded to read all the remaining lines, remarking upon each, that he believed or hoped it was applicable to himself, or that he thought it not so. His voice, though low, was throughout clear and firm, and the incident was a truly impressive one.

Rarely was a complaint or murmur extorted from him even by the most excruciating pain. One evening, as his eldest sons were present, he said, "Much as it usually gratifies me to see you, your presence now is unwelcome. I am suffering so much, that I cannot enjoy the society of any one. You can do nothing for my relief. I had rather you would go home." On another occasion, when the torture he experienced was almost beyond endurance,

he exclaimed, "Why was I born!" After he had obtained relief, one of his sons asked him why he had made that remark. He said that he meant, "Why was I born to suffer so much! But I see the reason. It is that I may be weaned from this world."

Happily, a few weeks before his death, he had longer intervals of ease. On one of these occasions, he asked a son if he remembered the word, derived from the Greek, signifying an easy death. Being answered in the negative, he said that in Pope's Works there was a letter from Dr. Arbuthnot, which he had not read for forty years, but which he distinctly remembered as containing this word, with a note mentioning that that *excellent* man died shortly afterwards; so that he had always associated the idea of an easy death with that of excellence of character. The book was opened, and the letter found. The writer says, "A recovery in my case, and at my age, is impossible. The kindest wish of my friends is *euthanasia*." To this subject he upon more than one occasion afterwards recurred, and, applying it to his own situation, said, "This is indeed euthanasia."

The following is an extract from the private journal of his third son, under date March 4, 1838, recording a dialogue which took place between him and his father: — "He said, 'I have left in my will the manuscript of La Place to the College. I wish I had not done so; for who will care any thing about it? It is a mere bagatelle.' I told him that, though in itself valueless, it would be interesting, perhaps, at some future period, for the lover of mathematics to look upon his original manuscript copy of so great a work. 'O,' said he, 'the work will soon become obsolete,

and nobody will look at it.' — 'Very true, it *will* become obsolete; and what work is there that will not become old? but still we honor talent, even if the labors of that talent are superseded by later writers.' — 'Yes,' replied father, 'Archimedes was of the same order of talent with Newton, and we honor him as much; and Leibnitz was equal to either of them. Euclid was a second-rate mathematician; yet I should like to see some of his hand-writing. My order of talent is very different from that of La Place. La Place originates things which it would have been impossible for me to have originated. La Place was of the Newton class; and there is the same difference between La Place and myself as between Archimedes and Euclid.'" *

Not less interesting were many incidents which occurred during his interviews with others. A young lady had been playing, by his desire, upon a harmonicon. As the strains of the music rose and

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* A similar anecdote is mentioned by Mr. Young, (Eulogy, p. 83,) of Dr. Bowditch's admitting La Place to be altogether his superior, and saying, "I *hope* I know as much about mathematics as Playfair." The word *hope* is probably a verbal mistake for *think*, since the expression otherwise seems to imply a disrespect for Playfair, such as Dr. Bowditch did not entertain, and to which, therefore, he could not, as we believe, have given utterance.

Dr. Bowditch was always of opinion that men are born with the same diversities of intellectual, as of physical powers and stature. Thus he would speak of one as "a man of small calibre," and say of another that he had reached his "couche de niveau." And he considered as wholly absurd a remark once made in his hearing, "I have no doubt that any man could become a mathematician if *he only had time!*" It seemed indeed, in his own case, that he became a mathematician *notwithstanding the want of time;* and a striking contrast is exhibited by Mr. Pickering, (Eulogy, p. 56,) between the long life of La Place, exclusively devoted to the pursuit of science, and the comparatively short life of his translator, of which so much was occupied by other important engagements.

fell upon the ear, like that of the Æolian harp, he listened intently; and when the last cadence had died away, and the musician approached to take her leave, he gave her an affectionate greeting, and after she had retired said, "You must tell her that she has been playing my dirge." A lady visited him, and as she was quitting the apartment, he said, "Good night," twice, with a tone of voice, and an expression of countenance, which indicated his conviction that he saw her for the last time; and then he immediately added, "Good morning at the resurrection."

Exactly a week before his death, the President of Harvard College, Mr. Quincy, had an interview with him, the following account of which he reduced to writing immediately afterwards: — He says, "I found him sitting in his chair, in his library, emaciated, pale, and apparently wasted by his disease to the last stage of life; his mind clear, active, and self-possessed. He spoke of his disorder as incurable; that he felt himself gradually sinking, and that he could not long survive. 'I have wished to see you,' said he, 'to take my leave, and that you might have the satisfaction of knowing that I depart willingly, cheerfully, and, as I hope, prepared. From my boyhood, my mind has been religiously impressed. I never did or could question the existence of a Supreme Being, and that he took an interest in the affairs of men. I have always endeavored to regulate my life in subjection to his will, and studied to bring my mind to an acquiescence in his dispensations; and now, at its close, I look back with gratitude for the manner in which He has distinguished

me, and for the many blessings of my lot. As to creeds of faith, I have always been of the sentiment of the poet, —

> For modes of faith let graceless zealots fight;
> His can't be wrong, whose life is in the right.' " *

Then he alluded to the lines of Hafiz, before mentioned, saying of them, " ' They are lines of which I at this moment feel all the force and consolation. I can only say, Mr. Quincy, that I am content; that I go willingly, resigned, and satisfied.' † After this he spoke to me of his works, his gratification that the four first volumes, which constituted the principal work, were so nearly completed. ' There are only about ten pages wanting; perhaps I may live to finish them. I have been to-day correcting the proofs.' He then showed me his will, explained his motives, asked me to read it, and my opinion. In every respect, his state of mind was such as at such a moment his best friends could have wished, — calm, collected, rational, resigned, — looking confidently for an existence beyond the grave, — happy in reflecting on the past, and in anticipating the future. On taking leave, he impressed a kiss on my hand, saying, ' Farewell ! ' " On another

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* Dr. Bowditch often repeated passages from Pope's " Essay on Man " and " Universal Prayer."

† The following lines, which he had also copied on the covers of his portfolio, are strikingly applicable to the frame of mind which he now manifested: —

> " Parent of nature, Master of the world,
> Where'er thy providence directs, behold
> My steps with cheerful resignation turn.
> Fate leads the willing, drags the backward on.
> Why should I grieve, when grieving I must bear;
> Or take with guilt, what guiltless I might share? "
>
> *Cleanthes, translated by Bolingbroke.* Orig. Epist. 107.

occasion, he mentioned the early impression made on his mind by the remark of a Quaker lady, that the external symbols and observances of religion were only valuable as indicating the existence of an inward principle, and a life in accordance with it.

Among those, also, who had the happiness of a like interview, were two of his subsequent Eulogists; one of whom (Judge White) says, "Being deeply affected by his whole appearance and conversation, and absorbed in the feelings which these produced, I could not retain much of the language which he uttered, though the general impression of what he said was indelibly fixed in my mind. I recollect, however, very distinctly his expressions in speaking of his early and deep feeling of religious truth and accountability. 'I cannot remember,' he said, 'when I had not this feeling, and when I did not act from it, or endeavor to. In my boyish days, when some of my companions, who had become infected with Tom Paine's * infidelity, broached his notions in conversation with me, I battled it with them stoutly, not exactly with the logic you would get from Locke, but with the logic I found *here*, (pointing to his breast;) and here it has always been my guide and support: it is my support still.' With feelings of humility inseparable from the purest minds in such a situation, he expressed the satisfaction which he felt from having always endeavored to do his duty..... 'My whole life,' he said, 'has been crowned with blessings beyond my deserts. I am still surrounded with blessings unnumbered. Why should I distrust the goodness

* The well-known "Age of Reason," by Thomas Paine, was a work which at that time had many readers in the community.

of God? Why should I not still be grateful and happy, and confide in his goodness?' And indeed why should he not?"*

In his interview with the other, (Rev. Mr. Young,) he dwelt much upon the kindness and assistance which in early life he had received in Salem, and expressed a like affection and gratitude towards the city in which he was to end his days. Mr. Young says that every one of the friends who then visited him "will bear testimony to his calm, serene state of mind. The words which he spoke in those precious interviews they will gather up and treasure in their memory, and will never forget them so long as they live." †

During his illness, Dr. Bowditch was asked to state his particular religious belief, and replied, — "Of what importance are *my* opinions to any one? I do not wish to be made a show of." When mention was made of the various teachers of mankind, inspired and others, (Socrates, Moses, &c.,) at the name of Christ, he said, "Yes — the greatest of them all." He dwelt often upon the fitness of the gospel to purify the heart and elevate the soul; and preferred to rest its authority upon these views, rather than upon any other. A recent article in the Christian Examiner, upon the point that a belief in miracles is not *essential* to a belief in Christianity, received his approbation.

The Rev. John Brazer, D. D., of Salem, was a friend who rarely visited Boston without passing the night under his roof, and

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* Eulogy, p. 53. † Discourse, p. 94.

whose own house had often had as an inmate for several weeks a daughter of Dr. Bowditch. He, during the last illness of the latter, offered up for him within his church a prayer which, in the words of a correspondent, "touched all hearts." More than one interview left his mind also filled with the same delightful impressions. In one of them, Dr. Bowditch, after alluding to the intimacy which existed between themselves, and also between himself and certain absent friends, observed that he felt himself "capable of faithful friendship." And in a brief public notice of his decease, this clergyman observes, "And so he was, in a degree never surpassed. Aching hearts can now testify to this; and there are some who feel that there is a void left in their affections, which can only be filled by a reunion with him in another world." Dr. Bowditch had requested his children to send to Dr. Brazer a small legacy, saying, "I know that it will be grateful to my friend to be assured that I thought of him with unabated love and confidence in my dying moments."

He had through life delighted to attend to the interests and feelings of many who were comparatively alone in the world; and for these services, they now expressed the warmest gratitude. A short time before his death, he received from a young lady who, being herself an invalid, could not in person express her sentiments towards him, a letter, in which she addresses him as "her dear father," and assures him that "his kindness fell not upon stony ground, when it fell upon an orphan's heart;" and the last person who had an interview with him, (except the members of his own family,) was another lady, before alluded to, (p. 143,) who expressed the delight which it had afforded her, and said that

she never could have been happy if he had died without her having had an opportunity of acknowledging her many and great obligations to the best of friends.

He himself literally never forgot a kindness. Thus he enjoined it on his children to transmit a legacy from him to the widow of one of his early employers, as being his oldest friend, "one whose affection had ever been to him as that of a mother, knowing no interruption or abatement." And he remembered in a similar manner a near relative, from whom he had always received a sister's welcome when he visited Salem.

One little being alone stood to him in the relation of a grandchild, the daughter of his eldest son. Desirous of leaving for her some small token of his remembrance, a silver cup was made by his directions, bearing the inscription, "Elizabeth Francis Bowditch, from her grandfather, Nathaniel Bowditch, March 1st, 1838," which, a day or two afterwards, he placed in her own hands. Though the image of that affectionate relative has long since faded away from her infant memory, that visible emblem will in after years remind her of one who, on the day of his death, when his failing senses led him erroneously to believe that he was addressing her mother, said, "Give my love to the little one."

There was one who was a sister to him by marriage, as she had always been in affection. Her daily visits during his illness were ever most welcome. She was a wife, and is a widow; was a mother, and is childless. She asked him his belief in a recognition of friends after death. He said to her, that, to his

apprehension, it was not clearly revealed. She exclaimed, "Do not say so. The chief consolation I have here, is the hope of meeting my lost ones again." He saw her grief as she retired, and in the course of that day told his family to be sure to inform him when she next called, as he wished much to see her. She came again. He said to her, "Let me assure you of my conviction that if, in the future world, it will be best that we should know again the friends we have here loved, that happiness will certainly be ours. What I meant to say yesterday was, that I do not think that Almighty Wisdom has explicitly revealed to mortals its decrees in this particular. But of one thing I am certain; all will be for the best. I approach the unseen world with the same reverence as I would the Holy of Holies, and have no desire to draw aside the veil which conceals its mysteries from my sight."

He had always entertained a most important as well as just sentiment, to which he constantly recurred during his illness, namely, that the highest intellectual cultivation and acquirements are entirely worthless, when compared with moral excellence. Often have we heard the author of this Commentary, during his last days, say that the consciousness which he then felt that throughout life he had endeavored to discharge its various duties, and the humble hope that those efforts would be approved hereafter, were far sweeter to him than any praises which he had already received, or the thoughts of any reputation which might await his name in future times as having been a faithful laborer in the cause of science.

Indeed, he valued his own peculiar studies for their elevating moral tendency, and for producing, as it were, an indirect effect, more important and lasting than their immediate results. Thus, a few days only before he died, he listened with attention and pleasure to a recent publication of Mrs. Sigourney, as it was read to him by his eldest son, where that writer says, "The adoring awe and profound humility inspired by the study of the planets and their laws, the love of truth which he cherishes who pursues the science that demonstrates, ***will find a response among archangels.***"

His own life, indeed, which had been spent in search of ***the true*** and ***the right***, had led to that unwavering belief and trust in the wise providence of God, and that humble and confiding submission to his will, which dispelled from the chamber of death the gloom which so often enshrouds it. His eye shone with its wonted brightness. His feeble voice inculcated, in its low and scarcely audible accents, its lessons of wisdom and love, with an earnestness and solemnity that seemed almost like inspiration, and spoke to the hearts of his hearers. Though his emaciated countenance told of many an hour of severe pain, the patient sufferer recalled the blessings he had enjoyed through life, and gratefully acknowledged those which still surrounded him. He was often, during his intervals of ease, playful and humorous in his remarks, but without any levity of thought or manner. He did not affect any indifference to life, but was perfectly willing to quit it. His was

"Earth's lingering love, to parting reconciled."

He approached his end with feelings the most becoming to the man and the Christian. His spirit was perfected by the sufferings through which he passed. Truly we esteem it a high privilege to have been present at such scenes. May the lesson of his life and his death be read by us aright!

On the morning of Friday, the sixteenth of March, at about six o'clock, when his sight was quite dim, his third son told him that he thought the time had come when he had better take leave of all his children. He answered, "I know it; I feel it." Each in succession then approached; and as the father returned the kiss he received, he inquired who it was; and in this manner he took a most affectionate farewell of his children, all of whom were gathered around his bedside. He said, 'O! sweet and pretty are the visions that rise up before me. 'Now let thy servant depart in peace, for mine eyes have seen thy salvation.' I say these words not because I have entire love for all the * . . . . but because I love the words, and feel kindly towards all * . . . ." Upon drinking a little water, he said, "How delicious! I have swallowed a drop — a drop from

'Siloa's brook, that flowed
Fast by the oracle of God.'"

Soon after this time, he fell into a tranquil sleep, from which, at about half past nine, he awoke, and once more desired to see his family assembled; then, looking round upon them, and addressing each by name, he said, "There, my children, I have known you all; have I not, perfectly? O! it is beautiful to me

* His voice here became wholly indistinct.

to see you all about me — pretty! It is beautiful to me to bless you all. May God forever bless you, my dears! It is for the last time that your father blesses you." It pleased Heaven, after this, to afflict him with the most severe bodily suffering during nearly three hours; but about noon it left him, and the quiet, tranquil state of body and mind returned. He addressed his son with the epithet "my dear," and said, "*It is coming! I am ready.*" And at one o'clock, Death gently set his seal upon that placid countenance.

He was buried on the morning of the following Sabbath. The face of spring was hidden by the falling snow. The streets of the city were silent and deserted. Every thing seemed to feel the quiet of the day and hour. Dust was given back to dust: the spirit had returned to God who gave it.

APPENDIX.

We have thought that a few particulars respecting the library of Dr. Bowditch, and its future intended appropriation, might be of some general interest. Montaigne has said of the apartment which contained his books, that he endeavored "to sequester this corner from all society, conjugal, filial, and civil." Dr. Bowditch, however, did exactly the reverse; he selected for his library the family parlor. To us it will always be the scene of the most happy associations. It will ever present one common centre of attraction, bringing our hearts near together, and uniting us in the close and intimate circle of brotherhood. It will recall a husband never so much immersed in his studious researches, as to be forgetful of those little proofs of affection which first won and ever secured in return the affections of the wife; and a wife never so much occupied with household duties and cares, as to neglect for a moment the kindest and most considerate attentions which woman's love ever prompted. A father's advice, also, and a mother's gentleness, will speak to us from the inanimate objects around. There the present will be full of the past. Nor will it be without its interest to many others. Who, indeed, that has ever seen Dr. Bowditch in that library, will fail to acknowledge the truth as well as beauty of the description given by one who was himself only an occasional, but always a welcome visiter there: — "You saw the Philosopher, entering, with all the enthusiasm of youth, into every subject of passing interest. You saw his eye kindle with honest indignation, or light up with sportive glee; you caught the infection of his quick, sharp-toned, good-natured laugh, and felt inclined to rub your hands in unison with him at every sally of wit, or every

outbreaking of mirthfulness. Let the conversation turn in which way it might, he was always prepared to take the lead; he always seemed to enter into it with a keener zest than any one else. You were charmed and delighted; the evening passed away before you were aware, and you did not reflect, until you had returned home, that you had been conversing with unrestrained freedom with the first Philosopher in America." *

Though, of course, it cannot have the same degree of interest to others, which is felt by the children of the deceased, we are confident, then, that all who have ever been favored with an interview like that above described, will be happy to learn that it is our hope and expectation, that for very many years that apartment will remain as it was left by our father; that the chair in which he sat, the desk and the portfolio containing the last proofs of this work which were ever submitted to him, the table around which were usually seated his family and friends, and the noble array of works of science which adorn the walls of the apartment, will all long remain undisturbed. That collection is one which, in its particular department, we believe to be unsurpassed, and probably unequalled, by any in the United States; and as no one of our number has in any considerable degree inherited the peculiar tastes of his father, it is obvious that to us it will be of but little practical utility. But we knew that he himself always freely lent his books to every one having a fondness for scientific pursuits, and who had not the means of otherwise obtaining them. We remembered, also, that a free diffusion of knowledge was, indeed, ever the chief object of his own life; and we have dedicated "The Bowditch Library" to the use of the public, as far as, in the exercise of a sound discretion, we deemed consistent with the safety of the books loaned.

Many of the most rare and valuable works in this library were presents to

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* President Wayland, of Brown University. Christian Review, September, 1838.

Dr. Bowditch from various societies or authors in other countries, — a circumstance which adds greatly to the interest of the collection; and we feel assured that, containing all the volumes which he habitually consulted while preparing this work, and also all the manuscript proofs of his early industry, this library will, as long as it shall exist, remain a most interesting monument to the memory alike of the Ship-Chandler's Apprentice, and the Commentator upon La Place.

ADDITIONAL NOTES.

Note to page 28.

Dr. Bowditch, in his last illness, in answer to the direct question of the writer, replied that he had made *six* voyages; and the anecdote respecting his being in Boston in July, 1802, attending to his vessel, which was wind-bound, seems to favor the supposition of another voyage besides the five mentioned in the text. We find, however, that the ship Astrea, *Stanwood* master, arrived in Boston, from Batavia and the Isle of France, July 10, 1802. One who was an inmate of his family from the time of his second marriage, October, 1800, says that he made but one voyage afterwards. Of that the journal is extant, to speak for itself, beginning November, 1802. So that we believe the text to be correct.

Note to page 60.

There are extant several portraits of Dr. Bowditch: —

1. There are two miniatures, taken at the times of his first and second marriage, apparently by the same artist. They have no merit either as likenesses or paintings.

2. About the year 1820, portraits of Dr. Bowditch and his wife were painted by James Frothingham of Salem, which, though wanting in expression, are yet in other respects very good. It was from his portrait of Mrs. Bowditch, that, after death, Miss Lalanne painted for the writer the miniature which is engraved for this memoir; certain alterations being introduced, which have made the likeness more accurate.

3. The portrait by Gilbert Stuart was painted in 1828, and, even in its unfinished state, is, we think, far superior to any other. A friend, who admired it very much, and selected the frame for it, has written on the back, "The last work of Stuart. 'Sancte inviolateque servatum sit.'"

4. The portraits belonging to the Salem East India Marine Society and the Salem Marine Society, are by Charles Osgood, having been copied by him from Stuart's picture, with the aid of a few additional sittings.

Note to page 69.

In the farewell address of his Royal Highness the Duke of Sussex, the President, delivered at the last anniversary meeting of the Royal Society of London, November, 1838, an outline is given of Dr. Bowditch's life, with the following summary of the merits of this Translation and Commentary: —

"Every person who is acquainted with the original must be aware of the great number of steps in the demonstrations which are left unsupplied, in many cases comprehending the entire processes which connect the enunciation of the propositions with the conclusions; and the constant reference which is made, both tacit and expressed, to results and principles, both analytical and mechanical, which are co-extensive with the entire range of known mathematical science: but in Dr. Bowditch's very elaborate Commentary every deficient step is supplied, every suppressed demonstration is introduced, every reference explained and illustrated; and a work which the labors of an ordinary life could hardly master, is rendered accessible to every reader who is acquainted with the principles of the differential and integral calculus, and in possession of even an elementary knowledge of statical and dynamical principles.

"When we consider the circumstances of Dr. Bowditch's early life, the obstacles which opposed his progress, the steady perseverance with which he overcame them, and the courage with which he ventured to expose the mysterious treasures of that sealed book, which had hitherto only been approached by those whose way had been cleared for them by a systematic and regular mathematical education, we shall be fully justified in pronouncing him to have been a most remarkable example of the pursuit of knowledge under difficulties, and well worthy of the enthusiastic respect and admiration of his countrymen, whose triumphs in the field of practical science have fully equalled, if not surpassed, the noblest works of the ancient world."

Note to page 82.

The following are the children of Dr. Bowditch, mentioned in the order of their ages: —

1. Nathaniel Ingersoll Bowditch, a graduate of Harvard College, 1822, is engaged in the practice of the law in Boston.

2. Jonathan Ingersoll Bowditch, having made a number of India voyages, is now president of the American Insurance Company in Boston.

3. Henry Ingersoll Bowditch, a graduate of Harvard College, 1828, having pursued the study of medicine, is now established in that profession in Boston.

4. Charles Ingersoll Bowditch, born December 1, 1809, died February 21, 1820.

5. A son, born July 7, 1813, died the next day.

6. Mary Ingersoll Bowditch.

7. William Ingersoll Bowditch, a graduate of Harvard College, 1838, now a student at law.

8. Elizabeth Boardman Ingersoll Bowditch.

Note to page 108.

We have said that Mr. Young's Discourse contains some trifling errors. Prepared in the course of a few weeks, it could hardly have been otherwise. Upon several points, we ourselves were at first mistaken. In justice to him, it is proper to specify these errors, that no vague impression of general inaccuracy may be left on the reader's mind. It is incorrectly said, in p. 23 of his Discourse, that Dr. Bowditch's instructer was an Irishman named Ford, and that when he solved the problem so quickly, he was actually punished for lying; in p. 39, that he learned French without an instructer; and in p. 59, that his knowledge of navigation was picked up during the intervals of his voyages. The anecdote in p. 51, of the report that "La Place once remarked, 'I am sure that Dr. Bowditch comprehends my work, for he has not only detected my errors, but has also shown me how I came to fall into them,'" may be correct; but Dr. Bowditch never heard of it. The statement in p. 68, of his entire abstinence from politics, is correct only of the latter part of his life. Such was his political zeal in early life, that he once assisted in carrying an invalid upon his bed to the polls to vote. The anecdote in p. 87, respecting his magnanimity in giving up the benefit of his chart of Salem to one who had endeavored to appropriate it wrongfully to himself, is related as it was at first told to us; but we are satisfied, from subsequent inquiries, that there was but one interview

between the parties, and that the account, though it has a basis of truth, is probably very much exaggerated. So in the anecdote, p. 33, respecting his solution of a question proposed by an Englishman while at the theatre, it is not true that he proposed in return one which the latter could not solve; as is proved by a written account of this incident entered by Dr. Bowditch in one of his common-place books at the time. In page 88, it is said that he, latterly, usually took one glass of wine after dinner, and another in the evening; and seldom or never more. He took two glasses at each time, which he called his *certain quantity*.

Notwithstanding the numerous details and anecdotes collected by Mr. Young, it is believed that the above are all the matters stated by him, relating to Dr. Bowditch, which require correction or qualification.

We have not thought it necessary to *quote* from this Discourse, in cases where the original information was obtained from conversations with us, or where the same materials were placed by others at the disposal both of Mr. Young and ourselves. A statement of some of these sources of information, will enable the reader to judge of the relative authenticity of different parts of the present memoir. During some months before the removal of the family from Salem, the writer, having a taste for antiquarian researches, spent several leisure hours of each day in examining the public records and other sources of information, for the purpose of tracing back his ancestry to the first settlement of that town. One of our number went to Salem the week after his father's death, where he remained during several days, making inquiries of those who had formerly been most nearly connected by business or friendship with the deceased. He invited Mr. Young to join him in a visit to Danvers, and the latter was thus present at the interview with the relations of Dr. Bowditch's first instructress, of which he has given an account. He likewise procured a drawing of the house his father there occupied, which Mr. Young caused to be engraved for his Discourse. Among others, Captain Prince was inquired of respecting his recollections of Dr. Bowditch. He referred us to a written account, containing anecdotes of the second, third, and fourth voyages, which his son had drawn up a day or two before, and sent to Mr. Pickering, (not taken down by Mr. Pickering from that gentleman's own lips, as was thought by Mr. Young.) This account was afterwards lent by Mr. Pickering both to Mr. Young and ourselves. The original journals of all Dr. Bowditch's voyages, except the second, are still preserved in his library, and verify the accuracy of Captain Prince's dates, &c., given in his account. The whole series of the successive editions of the Navigator are also in the library, the prefaces to which show very clearly the most important circumstances connected with the commencement and progress of that work. All Dr. Bowditch's occasional publications having been collected and bound together by him, we were enabled even to add one or two

to those discovered by Mr. Pickering, who himself added several to the list given by Mr. Young. Dr. Bowditch's manuscripts were given to the writer of the present memoir. Among them is a separate file of all the letters received by him relating to the *Mécanique Céleste*, and another containing all his diplomas, and letters offering him any appointments, either of honor or profit. Every thing connected with the printing of the *Mécanique Céleste*, and the management of the Life Insurance Company, and indeed most of the recent incidents of his life, are, it is needless to say, within our own personal knowledge; and those of his last illness, especially, are indelibly impressed upon our memory. The information which we possessed from these various sources, we were happy to communicate to Mr. Young. Every one who reads them both, will perceive that in its really important details, his Discourse agrees with the present memoir. The summary of character which is given by him we believe to be a strikingly just one, and sufficient, if nothing else had ever been written, to place before the reader quite a distinct and faithful portrait of Dr. Bowditch.

Note to page 110.

The property left by Dr. Bowditch at his death, exclusive of his dwelling-house in Boston, and the library, furniture, &c., in it, consisted of printed copies of this work,

valued in the inventory at	$5,000 00
And other personal estate, valued at	31,571 38
Total,	$36,571 38

*The Translator presented this Work to the Institutions and Individuals named in the following List, and perhaps to Others not known to us.**

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* If any, to whom the translator intended to present it, have not received the work, and will inform us of an opportunity of sending it safely, it will be forwarded by us according to the wishes of our deceased father.

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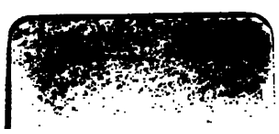

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